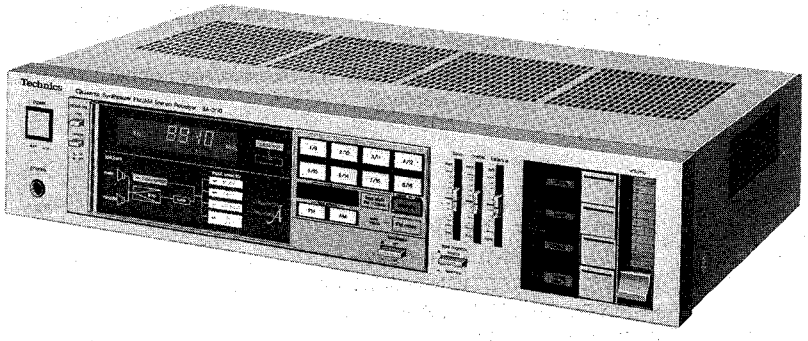
ORDER NO. HAD84092908C2

Service Manual

QUARTZ Synthesizer FM/AM Stereo Receiver

Receiver

SA-350



Color

(K)...Black Type
(S)...Silver Type

Color	Area
(K) (S)	[EGA]...F.R. Germany

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TECHNISCHE DATEN

(DIN 45 500)

■ VERSTÄRKERTEIL

Dauerton-Ausgangsleistung bei 20 Hz ~ 20 kHz
beide Kanäle ausgesteuert 2 × 45W (4 Ω)
2 × 37W (8 Ω)

Dauerton-Ausgangsleistung bei 1 kHz
beide Kanäle ausgesteuert 2 × 55W (4Ω)
2 × 47W (8 Ω)

Gesamtklirrfaktor
Nennleistung bei 20 Hz ~ 20 kHz 0,02% (4 Ω)
0,007% (8 Ω)
halbe Nennleistung bei 1 kHz 0,001% (8 Ω)

Intermodulationsfaktor
Nennleistung bei 250 Hz: 8 kHz = 4:1, 4 Ω 0,02%
Nennleistung bei 60 Hz: 7 kHz = 4:1, nach SMPTE, 8 Ω 0,01%

Leistungsbandbreite
beide Kanäle ausgesteuert bei −3 dB
5 Hz ~ 40 kHz (4 Ω)

Dämpfungsfaktor 20 (4 Ω), 40 (8 Ω)

Eingangsempfindlichkeit und -impedanz
Phono 2,5 mV/47 kΩ
CD/AUX1, VIDEO/AUX2, TAPE/EXT 150 mV/22 kΩ

Maximale TA-Eingangsspannung (1 kHz, eff.) 160 mV

Geräuschabstand
Nennleistung (4 Ω)
Phono 72 dB (nach IHF, A: 80 dB)
CD/AUX1, VIDEO/AUX2, TAPE/EXT
88 dB (nach IHF, A: 95 dB)

Frequenzgang
Phono RIAA-Standardkurve
±0,8 dB (30 Hz ~ 15 kHz)
CD/AUX1, VIDEO/AUX2, TAPE/EXT
5 Hz ~ 70 kHz (−3 dB)

Klangregler
Baßregler (BASS) 50 Hz, +10 dB ~ −10 dB
Höhenregler (TREBLE) 20 kHz, +10 dB ~ −10 dB

Gehörrichtige Lautstärkekorrektur (Loudness)
(bei −30 dB Ausgangsleistung) 50 Hz, +9 dB

Ausgangsspannung und -impedanz
Tape, Aufnahme (TAPE, REC OUT) 150 mV

Kanalabweichung (250 Hz ~ 6300 Hz) ±1 dB
Übersprechdämpfung 55 dB
Kopfhörerpegel und -impedanz 440 mV/330 Ω
Lautsprecherimpedanz
MAIN oder REMOTE 4 Ω ~ 16 Ω
MAIN und REMOTE 8 Ω ~ 16 Ω

■ UKW-TUNERTEIL

Wellenbereich 87,50 ~ 108,00 MHz
87,525~108,025MHz (+25kHz shift)

Eingangsempfindlichkeit
S/R 30 dB 1,3 μV (75 Ω)
S/R 26 dB 1,2 μV (75 Ω)
S/R 20 dB 0,9 μV (75 Ω)

Nutzempfindlichkeit nach IHF 1,5 μV (nach IHF '58)

Gesamtklirrfaktor
Mono 0,15%
Stereo 0,3%

Geräuschabstand
Mono 60 dB (77 dB nach IHF)
Stereo 58 dB (71 dB nach IHF)

Frequenzgang 20 Hz ~ 15 kHz (+1 dB ~ −2 dB)

Trennschärfe bei Störsender ±400 kHz 70 dB

Einfangverhältnis 1 dB

Spiegelfrequenz-Dämpfung bei 98 MHz 75 dB

ZF-Dämpfung bei 98 MHz 100 dB

Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz 100 dB

MW-Unterdrückung 50 dB

Übersprechdämpfung
1 kHz 40 dB
10 kHz 30 dB

Trägerrest
19 kHz −60 dB (−65 dB nach IHF)
38 kHz −70 dB (−75 dB nach IHF)

Kanalabweichung (250 Hz ~ 6300 Hz) ±1,5 dB

Begrenzereinsatz 1,2 μV

Bandbreite
ZF-Verstärker 180 kHz
UKW-Demodulator 1000 kHz

Antennenanschluß 75 Ω (unsymmetrisch)

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

SA-350

■ MW-TUNERTEIL

Wellenbereiche	522 ~ 1629 kHz
Eingangsempfindlichkeit (S/R 20 dB)	20 μV, 300 μV/m
Trennschärfe	55 dB
Spiegelfrequenz-Dämpfung bei 999 kHz	40 dB
ZF-Dämpfung bei 999 kHz	60 dB

■ ALLGEMEINE DATEN

Leistungsaufnahme	330 W
Netzspannung	Wechselstrom 50 Hz/60 Hz, 220V
Abmessungen (B×H×T)	430 × 97 × 283 mm (16-15/16" × 3-13/16" ×11-5/32")
Gewicht	6,6 kg (14,6 lb.)

Bemerkung:
Der Gesamtklirrfaktor wurde mit einem digitalen Rauschspektrometer (Anlage H.P. 3045) gemessen.

(Spezifikationen Können infolge von Verbesserungen ohne Ankündigung geändert werden.)

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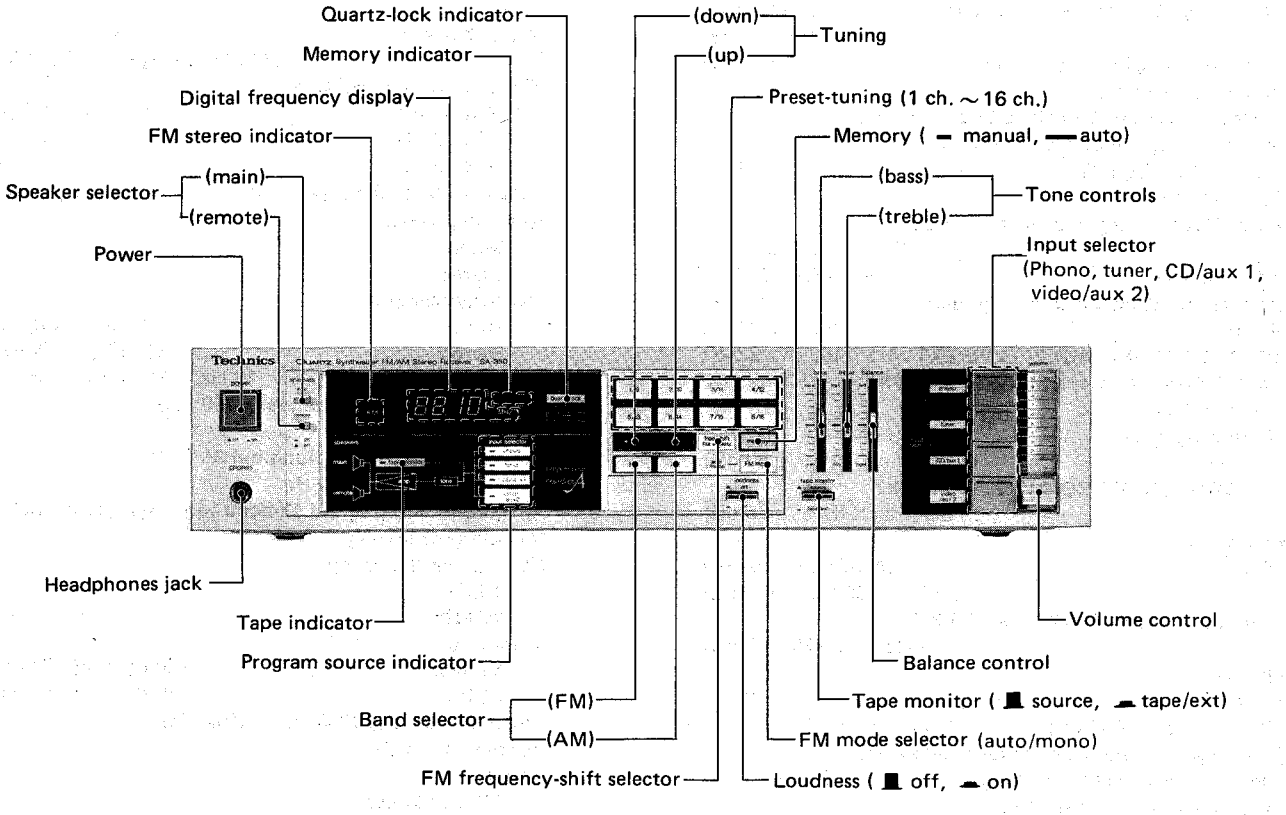
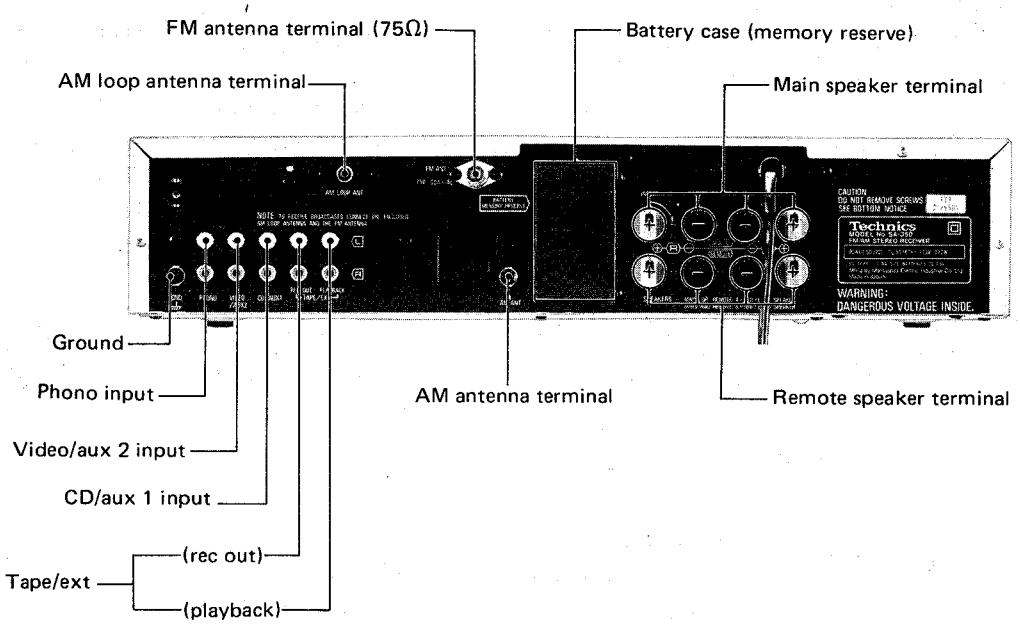
■ LOCATION OF CONTROLS





*** Phono input capacitance is about 150pF.**

■ BEFORE REPAIR AND ADJUSTMENT

1. Turn off the power supply and short-circuit of the power supply capacitors (C703, C704, 8200μF) with a resistor (about 10Ω, 5W) to discharge the charged voltage.
   Do not short both ends of C703 and C704 with a screwdriver. It may damage the component.
2. Before turning on the power supply after completion of repair, slowly apply the primary voltage by using a power supply voltage controller to make sure that the consumed current at 220V, 50/60 Hz in no-signal mode is 90 ~260 mA (50 Hz) and 80 ~250 mA (60 Hz).

■ PROTECTION CIRCUITRY

The protection circuitry may have operated if eigher of the following conditions is noticed:

- No sound is heard when the power is turned on.
- Sound stops during performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of this unit are used.

If this occurs, follow the procedure outlined below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again.

Note:

When the protection circuitry functions the unit will not operate unless the power is first turned off and then on again.

■ HOW TO PRESET RADIO BROADCAST FREQUENCIES

This unit is used to preset as many as 16 radio broadcast frequencies: FM/AM random presetting. After broadcast frequencies have been preset as described below, any desired station can be quickly and easily selected by simply touching one button.

• Memory presetting

There are two types of memory presetting: automatic and manual. Select whichever is preferred.

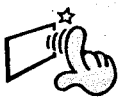
1. Automatic presetting:
Beginning at the frequency indicated by the digital display, the next consecutive FM broadcasting stations and AM broadcasting stations will be automatically preset to "channels" 1 through 8 for FM and 9 through 16 for AM, respectively.

Note that in mountainous or remote areas, broadcasting stations which have weak broadcasting signals cannot be automatically preset into the memory.

2. Manual presetting:
Stations can be freely preset to any desired channel.

■ Before memory presetting

Each button is used to preset two stations.

Presetting front channels (CH 1~8)	Presetting back channels (CH 9~16)
 Press momentarily.	Press slightly longer.

• Automatic memory presetting

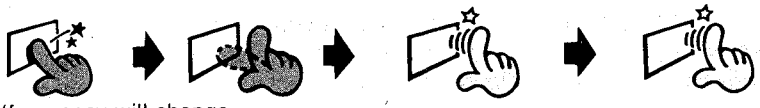
1 • **To preset an FM station: press the "FM" button.**
• **To preset an AM station: press the "AM" button.**

2 • **To preset FM broadcasting stations: Set to 87.50 MHz.**
• **To preset AM broadcasting stations: Set to 522 kHz.**

① Press the button and hold slightly (frequency will change continuously).

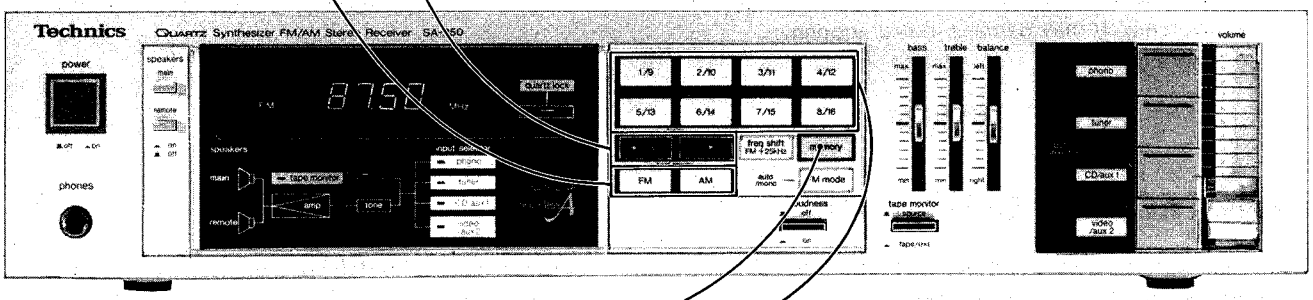
② Release it at 87.50 MHz for FM or 522 kHz for AM, and then press the button again momentarily (frequency change will stop).

③ Press the button momentarily (frequency will change each time the button is pressed), and tune to one of the above frequencies.



(frequency will change continuously).

(frequency change will stop).



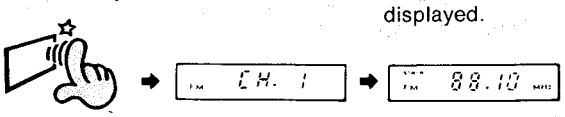
3 **Press. When the frequency indication begins to change, release.**

(The frequency will change upward, and the automatic presetting will begin with the broadcasting station of the lowest frequency and will continue in order.)

4 Confirm the names (call signs, etc.) of the broadcasting stations which are preset to each channel, and enter them on the file sheet

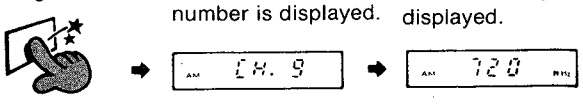
To check the front channels (CH 1~8):

Press momentarily.	Channel number is displayed.	Frequency stored in the memory is displayed.



To check the back channels (CH 9~16):

Press slightly longer.	Release the button when the channel number is displayed.	Frequency stored in the memory is displayed.



Notes:

1. In areas where there are less than 8 FM stations, the remaining channels (through channel 8) will be left empty. The empty channels can be filled by using manual memory presetting.
2. If a new broadcasting station is preset into a channel, the broadcasting station which was previously entered in that channel will be automatically erased.

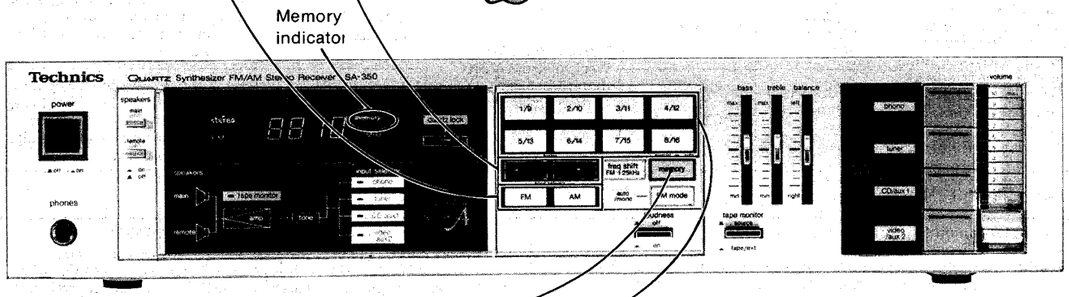
• Manual memory presetting

1 To preset an FM station: press the "FM" button.
To preset an AM station: press the "AM" button.

2 Press the appropriate tuning button to tune to the desired broadcast.

- **Auto tuning**
  Press the button. When the frequency indication begins to change, release the button (a broadcasting station will be selected automatically). Repeat this operation until the desired station is found.

- **Manual tuning**
  Press the button momentarily and tune to the desired station (the frequency will change each time the button is pressed).



3 Press momentarily, and then release.

(The memory indicator will illuminate for approximately 5 seconds.)

Note:
If the button is pressed continuously, the frequency will begin to change, and the memory will be preset automatically.
To stop the automatic memory presetting, once again press either the "up" button or the "down" button.

5 Enter the name (call sign, etc.) of the preset broadcasting station on the file sheet .
This completes the procedures for presetting radio broadcast frequencies. The other preset-tuning buttons can be preset in the same way by following steps (1) through (4).

4 While the memory indicator is illuminated, press the button of the desired channel.

- **To preset channels 1 through 8:**

Press the button momentarily, and then release.

- **To preset channels 9 through 16:**

Press the button slightly longer, and then release.

Note:
1. If the memory indication illumination stops before you press the button, once again repeat step (3) and then step (4).
2. If a new broadcasting station is preset into a channel, the broadcasting station which was previously entered in that channel will be automatically erased.

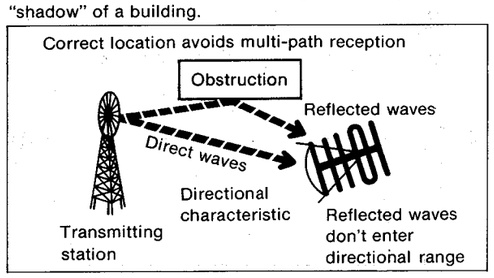
■ FM ANTENNA

For best reception of FM broadcasts, select an FM antenna with the best characteristics for the area in which the unit is used.

• Location of antenna

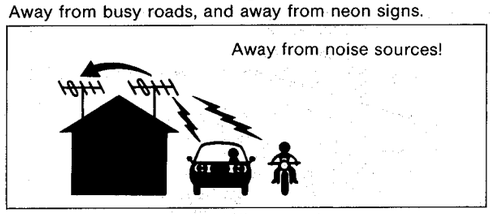
Install the antenna:

1. Where it will receive FM broadcast signals directly; not in the "shadow" of a building.

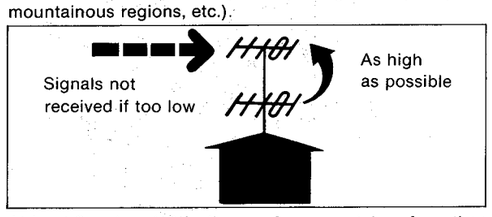


Note:
Multi-path distortion is the distortion which results from the reception of two types of signals: those reflected from nearby buildings, mountains, etc., and those received directly from the broadcasting station.

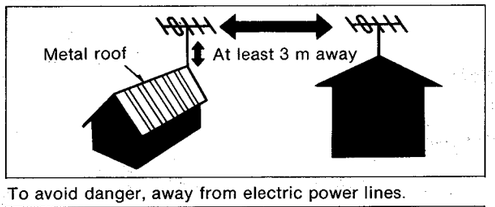
2. Away from busy roads, and away from neon signs.



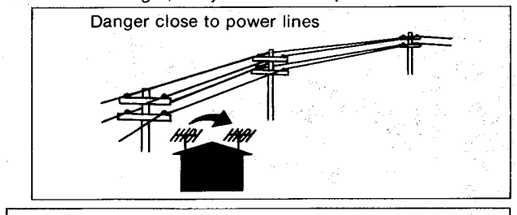
3. At least 4 meters (13 feet) above the ground (except in mountainous regions, etc.).



4. At least 3 meters (10 feet) away from a metal roof or other antennas.



5. To avoid danger, away from electric power lines.



Note:
An outdoor antenna should be installed by a competent technician only.

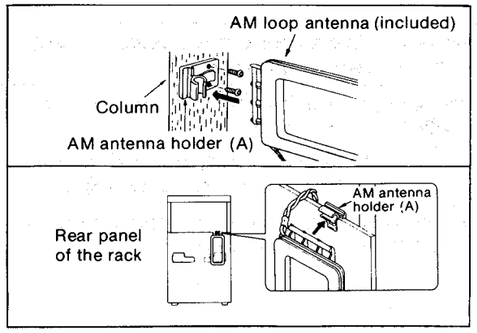
■ AM ANTENNA

This unit includes an AM loop antenna. No outdoor antenna is necessary unless the broadcast signals in your area are especially weak. (Connect the loop antenna even if an outdoor antenna is used; if it is not connected, AM reception will not be possible.)

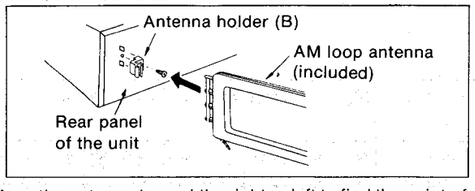
• How to use the AM loop antenna

Pay attention to the following points when attaching the antenna.
1) Do not attach it horizontally (to do so would impair reception).
2) Do not attach it close to metal surfaces (to do so would result in noise).
3) Do not attach it close to power cords, speaker wires, etc. (to do so would result in noise).
4) Do not attach it close to a tape deck (when the tape deck is being used, chirping or beeping sounds may be received).

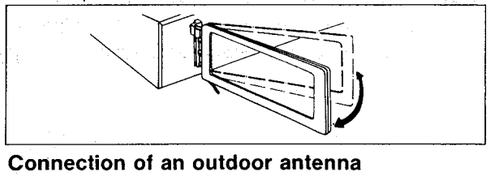
1. Connect the AM loop antenna to the AM antenna terminals located on the rear panel of the unit.
2. Find the height and direction of the antenna where reception is best and then fix it vertically to the wall, rack, etc.
   1) When attaching the antenna to a wall, column or rack.



   2) When attaching the antenna to the unit.
   This type of installation may cause impaired reception or result in signal noise. If possible, attach the antenna to the rack, a wall, or a column.



3. Move the antenna toward the right or left to find the point of best reception.



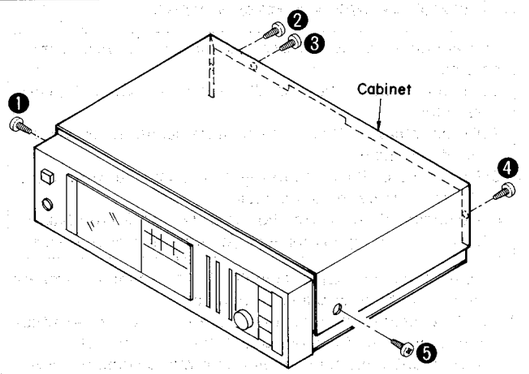
■ Connection of an outdoor antenna

If an outside AM antenna is installed (in mountainous regions or between reinforced-concrete buildings), install it in a location away from utility poles, high-voltage power lines, high buildings and busy roads.

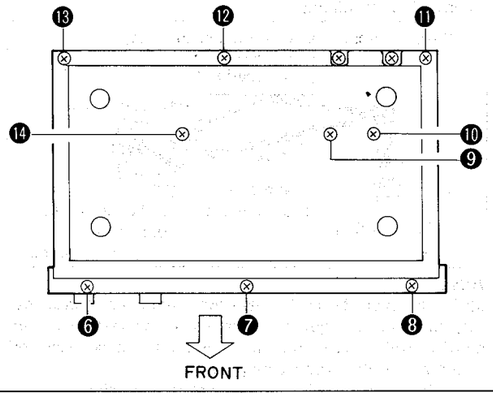
Note:
An outdoor antenna should be installed by a competent technician only.

■ DISASSEMBLY INSTRUCTIONS

Ref. No. 1	How to remove the cabinet
Procedure 1	• Remove the 5 screws (❶ ~ ❺).

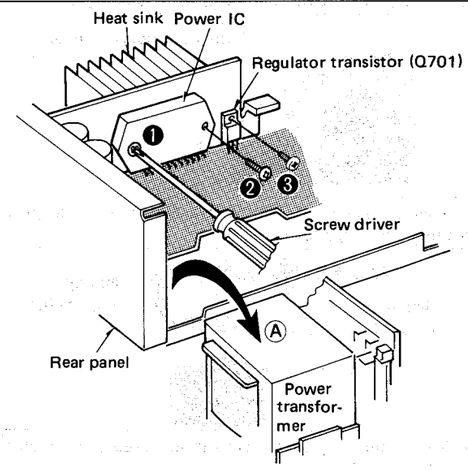


Ref. No. 2	How to remove the bottom board
Procedure 2	• Remove the 9 screws (❻ ~ ⓮).



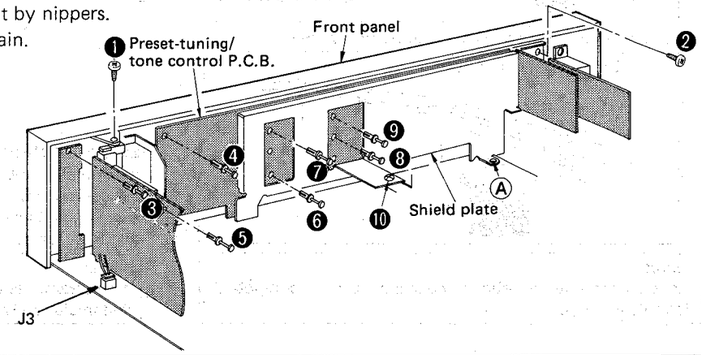
Ref. No. 3	How to remove the power IC and regulator transistor
Procedure 1→2→3	• Detach the power transformer in the direction of arrow Ⓐ. • Unsolder the power IC and regulator transistor. • Remove the 3 screws (❶ ~ ❸).

• When mounting the power IC, apply silicone compound (SZZ0L15) to the rear of power IC.



Ref. No. 4	How to remove the front panel
Procedure 1→2→4	• Remove the 2 screws (❶, ❷) and pin socket (J3) of the front panel. • Remove the 7 rivets (❸ ~ ❾) of the front panel.

Note: When remove the shield plate, remove the 1 screw ⓾ and rivet Ⓐ.
When remove the rivet Ⓐ, cut it by nippers.
Rivet Ⓐ is unnecessary to fix again.



■ MESSUNGEN UND JUSTIERUNGEN

AM (MW)-EINSTELLUNG

Anmerkung: Die AM OSC-Spule (L202) und AM ZFT (T203) sind bereits justiert und benötigen keine Justierung.

• Stellungen und zu benutzende Geräte
1. Elektronische Voltmeter für Wechsel- und Gleichstrom (EVM).
2. AM (MW)-Meßsender (AM-SG).
3. Bereichsschalter . . . . . AM
4. Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute ablesung.
5. Einen nichtmetallischen Schraubenzieher für die Einstellungen verwenden.
6. Die Netzspannung auf ihren Sollwert einstellen.

Nr.	AM (MW)-MESSENDER ANSCHLUSS	AM (MW)-MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICH-SPUNKTE	ABGLEICHSVERFAHREN
	MW-HF-ABGLEICH					
1	Einen MW-Signal-generator über einen 200pF Kondensator mit dem MW-Antenne-neingang verbinden. Die gemeinsame Leitung mit dem Chassis verbinden. (Schwacher Eingang)	612 kHz (400 Hz Modulat., 30%)	612 kHz	Oszilloskop oder Wechselstrom-Volt-meter über den Lautsprecher schließen	L201 (Ant. Spule)	1. Auf max. Ausgang abgleichen 2. Den Ferritkern von L201 mit einem Schraubendreher justieren.
2		1503 kHz (400Hz Modulat., 30%)	1503 kHz		CT201 (Ant. Trimmer)	1. Auf max. Ausgang abgleichen. 2. Die Schritte (1) und (2) wied-erholen, bis die Frequenz genau mit der Skalenanzeige übereinstimmt.

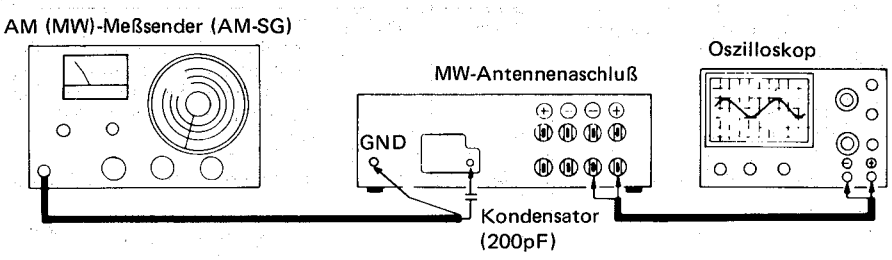
FM (UKW)-EINSTELLUNG

• Stellungen und zu benutzenden Geräte
1. UKW-Meßsender (FM-SG).
2. Elektronische Voltmeter für Wechsel-und Gleichstrom (EVM)
3. Signalfrequenzmesser (meßar für 19kHz und 108MHz)
4. Bereichsschalter . . . . . FM
5. Den UKW-Betriebsartenschalter auf die "mono"-position stellen.
6. Die anderen Einstellungen sind gleich wie beider MW-Justierung.
7. Stereo-Modular (oder Trennmesser)

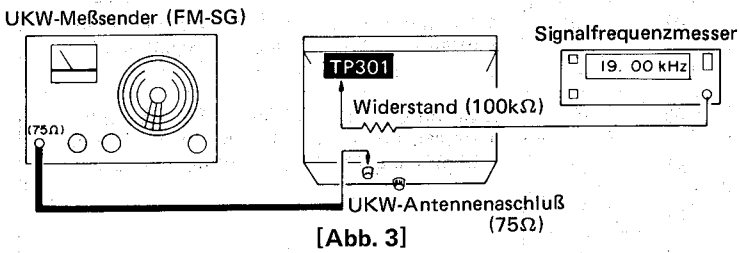
*** Vorbereitung des UKW-Meßoszillators (UKW-MO)**
1. Die Normal-Eingangsleistung dieses Gerätes beträgt 60 dB (1 mV), 400 Hz, 100% Modulation. (Wegen der Dämpfung bei Verwendung von Koaxialkabeln, muß die MO-Ausgangsleistung 6 dB oder mehr betragen: d.h. wenn die Eingangsleistung 60 dB beträgt, muß der MO-Ausgang 66 dB betragen.
2. Stereo-Modulator an FM-SG anschließen.

Nr.	FM (UKW) MESSENDER ANSCHLUSS	FM (UKW) MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICH-SPUNKTE	ABGLEICHSVERFAHREN
	QUARZ-EIN-PEGELJUSTIERUNG					
3	UKW-MO an FM antennende, anschließen. (10dB an den Antennen-anschluß anlegen.)	100.10MHz (400Hz Modulat., 100%)	100.10MHz	Gleichstrom-Röhren-voltmeter zwischen TP201 und TP202 anschließen.	T201 (Diskriminator FT) VR201 (Quarz-Pegel)	1. Den Kern von T201 so justieren, daß die im Signal-zustand gemessene Spannung 0mV im 300mV-Bereich beträgt. 2. Danach sicherstellen, daß die Quarzanzeige nach Justierung von VR201 auf-leuchtet, so daß die Anzeige erlöscht, wenn der Eingangs-pegel um 1 ~ 2dB gesenkt wird.
	ABGLEICH AUF MIN. VERZERRUNG IN STELLUNG UKW-MONO					
4	UKW-MO an FM-Antennende, anschließen, wie in Abb. 2 gezeigt. (60 dB an den Antenneneingang anlegen.)	100.1 MHz (400Hz Modulat., 100%)	100.1 MHz	Ein Gleichstromrören-voltmeter zwishen TP201 (–) und TP202 (+) über eine Drosselspule verbinden. (Siehe Abb. 2)	T201 (Diskriminator FT)	1. Den Kern von T201 so justieren, daß die gemessene Spannung im signallosen Modus 0mV im 300mV Bereich beträgt.
5		100.1 MHz (400Hz Modulat., 100%)	100.1 MHz	Klirrfaktor-Meßbrücke uber den Lautsprecher schließen	T202 (Diskriminator FT)	1. T202 Kern für minimale Verzerrung der rechten und linken Kanäle justieren.
	UKW-STEREO-DEKODER-ABGLEICH					
6	UNTER VERWENDUNG EINES ZÄHLES 1. Unmodulierts Mono-Signal 100.1MHz in das Gerät speisen. 2. FM mode-Schalter auf "auto" stellen. 3. Zähler über einen Widerstand 100k ohm an TP301 schließen. 4. **VR301** auf 19 kHz ± 30 Hz einstellen.			ALTERNATIV-MEB METHODE 1. Stereosignal entweder von einem Stereogenerator. Oder einem Sender einspeisen. 2. **VR301** so einstellen, bis die Stereolampe auf leuchtet. Schleifer von **VR301** sichern, wie in Abb. 4 gezeigt.		

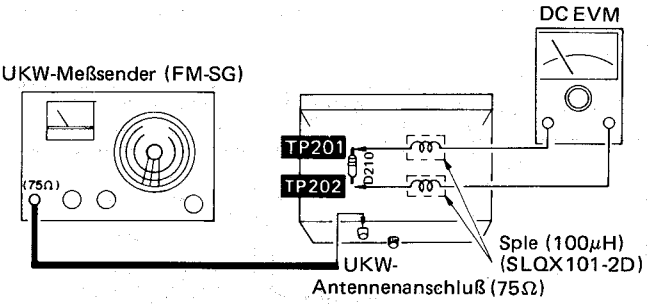
Nr.	FM (UKW) MESSENDER ANSCHLUSS	FM (UKW) MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICH-SPUNKTE	ABGLEICHSVERFAHREN
	TERNNUNGS-ABGLEICH					
7	Meßsender über eine UKW-Kunstantenne an den UKW-Antenneneingang anschließen. (Stereo-Pilotsignal 10% moduliert.)	100.1 MHz (400 Hz Modulat., 90%) L order R-Betriebsart.)	100.1 MHz	Wechselstrom-Voltmeter über Tiefpaßfilter (fc = 15 ~19 kHz) an Ausgangsanschlüsse (OUTPUT) des Gerätes schließen.	VR302	1. Den UKW-Betriebsarten-schalter in die "auto"-Position stellen. 2. VR302 auf minimale Anzeige des R-Ausgangs bei Stereo-modulator in L-(L-Kanalmodulation) Modus, und auf minimale Anzeige des L-Ausgangs in R-Modus abgleichen.



[Abb. 1]
MW-HF-Justierung

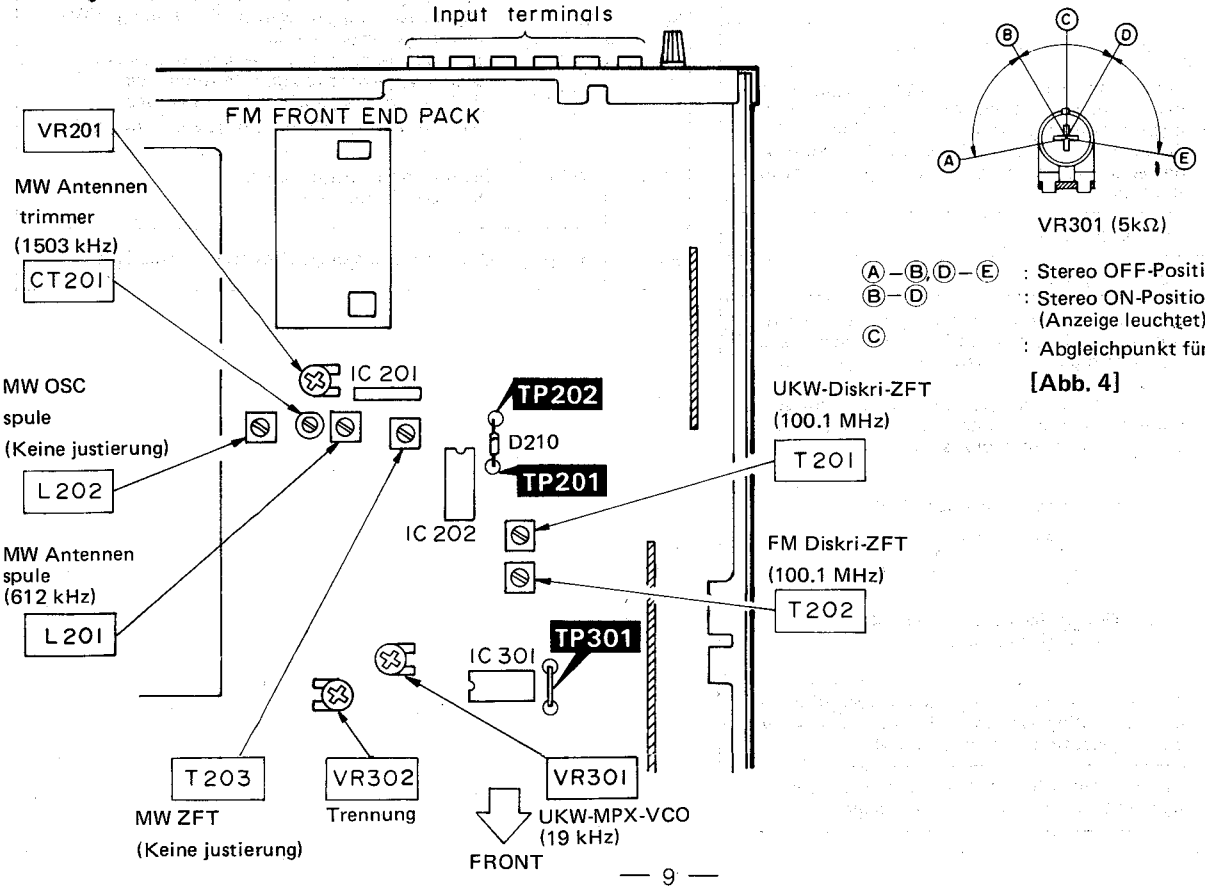


[Abb. 3]
UKW-MPX-VCO-Justierung



[Abb. 2]
UKW-offset-Justierung

- **Zu justierende Punkte**

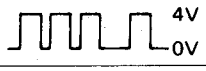
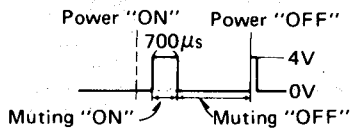
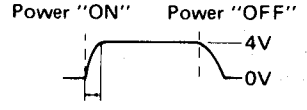


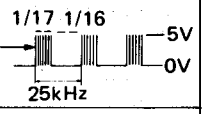
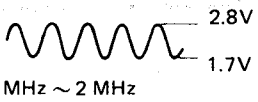
VR301 (5kΩ)

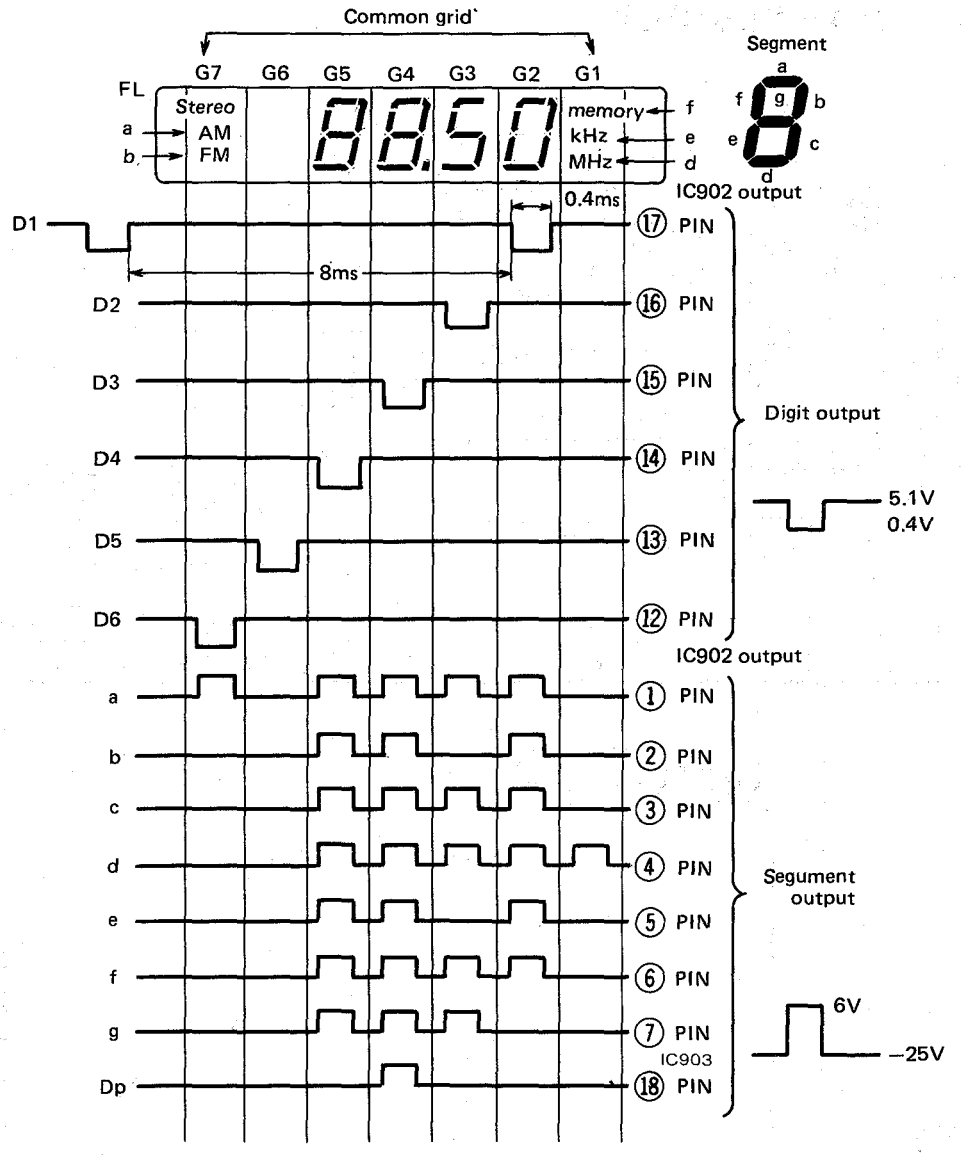
Ⓐ–Ⓑ,Ⓓ–Ⓔ : Stereo OFF-Position.
Ⓑ–Ⓓ : Stereo ON-Position. (Anzeige leuchtet)
Ⓒ : Abgleichpunkt für den Pilotschaltkreis.

[Abb. 4]

■ FUNCTION OF TERMINAL (PLL CONTROLLER IC902)

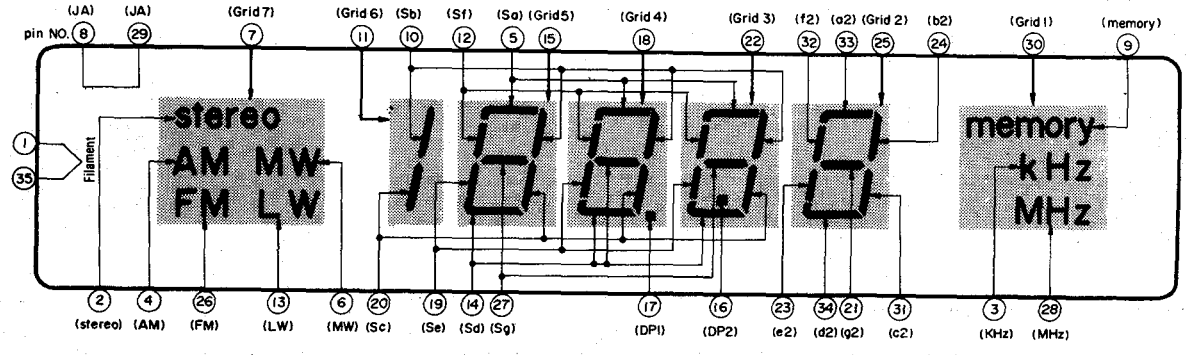
Pin No.	Mark	Description of terminal
1	Sa	Segment signal output terminal for display. **(Refer to Abb. 5)**
2	Sb	
3	Sc	
4	Sd	
5	Se	
6	Sf	
7	Sg	
8	K0	Input terminal for key return signal from external key matrix. The output of segment terminals (a ~ g) is used as the key return signal source. 
9	K1	
10	K2	
11	K3	
12	D6	Digit signal output terminal for display. **(Refer to Abb. 5)**
13	D5	
14	D4	
15	D3	
16	D2	This is the output terminal to eliminate shock noise due to unlocking at PLL. When the CE terminal is at low level, the output from this terminal is at high level. 
17	D1	
18	MT	
19	X2	Connecting terminal for crystal oscillator. The crystal connected is at 4.5 MHz.
20	X1	
21	VDD	Power supply terminal of the device.
22	E01	When the divided oscillation frequency is higher than the standard frequency, H-level output is delivered from these terminals. When it is lower, L-level (0V) output is delivered. When they coincide, it results in floating.
23	GND	Ground terminal.
24	E02	Not used in this unit.
25	CE	This is the selected signal input terminal of the device. When operating the device, make the level high, and when it is not used, make the level low. When this terminal is at low level, all the segment (a ~ g) and digits (D1 ~ D6) terminals are off, but the memory is held.  The device does not operate during this period.
26	SD	This input terminal detects the reception of a broadcasting station. The voltage is 4.2V during reception, and otherwise 0V.
27	FM	Input terminal for FM OSC output frequency-divided to 1/16 or 1/17 by pre-scaler.

Pin No.	Mark	Descripiton of terminal
28	PSC	This is the terminal to deliver the frequency dividing ratio changeover output signal to the pre-scaler. The terminal continues to produce pulses at the rise of the signal applied to FM terminal (27) until the content of the inside swallow counter is 0. The frequency dividing ratio of prescaler is 1/17. When the swallow counter comes to 0, the terminal level becomes low, then the frequency dividing ratio of pre-scaler is 1/16. Pulse two times larger than the value that cannot be divided by VCO/16. 
29	INT	This is the interrupt demand signal input terminal. The signal from the control input terminal is put into this terminal, demanding for interruption, then the flow of program will be unconditionally shifted to the address No. 1.
30	AM	Input terminal for AM OSC output.  1 MHz ~ 2 MHz
31	Dp	2-bit input/output. Dp (31) is decimal point indication output terminal for digital indication. Lamp (32) is not used in this unit.
32	Lamp	
33	IF	4-Bit output port. FM (35) is FM/AM output terminal; 5V in FM and 0V in AM. IF (33), LW (34) and AM (36) are not used in this unit.
34	LW	
35	FM	
36	AM	
37	TV	This is 4-bit input/output port. MONO terminal (38) is the auto/mono changeover output terminal, which is 5V in auto, and 0V in mono. SDC terminal (39) is the auto scan/manual scan changeover output terminal, which is 5V in auto scan, and 0V in manual scan. TV (37) and D(40) are not used in this unit.
38	MONO	
39	SDC	
40	D	
41	COMP	One-bit input/output port. (Not used in this unit.)
42	VDP	One-bit output port. (Not used in this unit.)

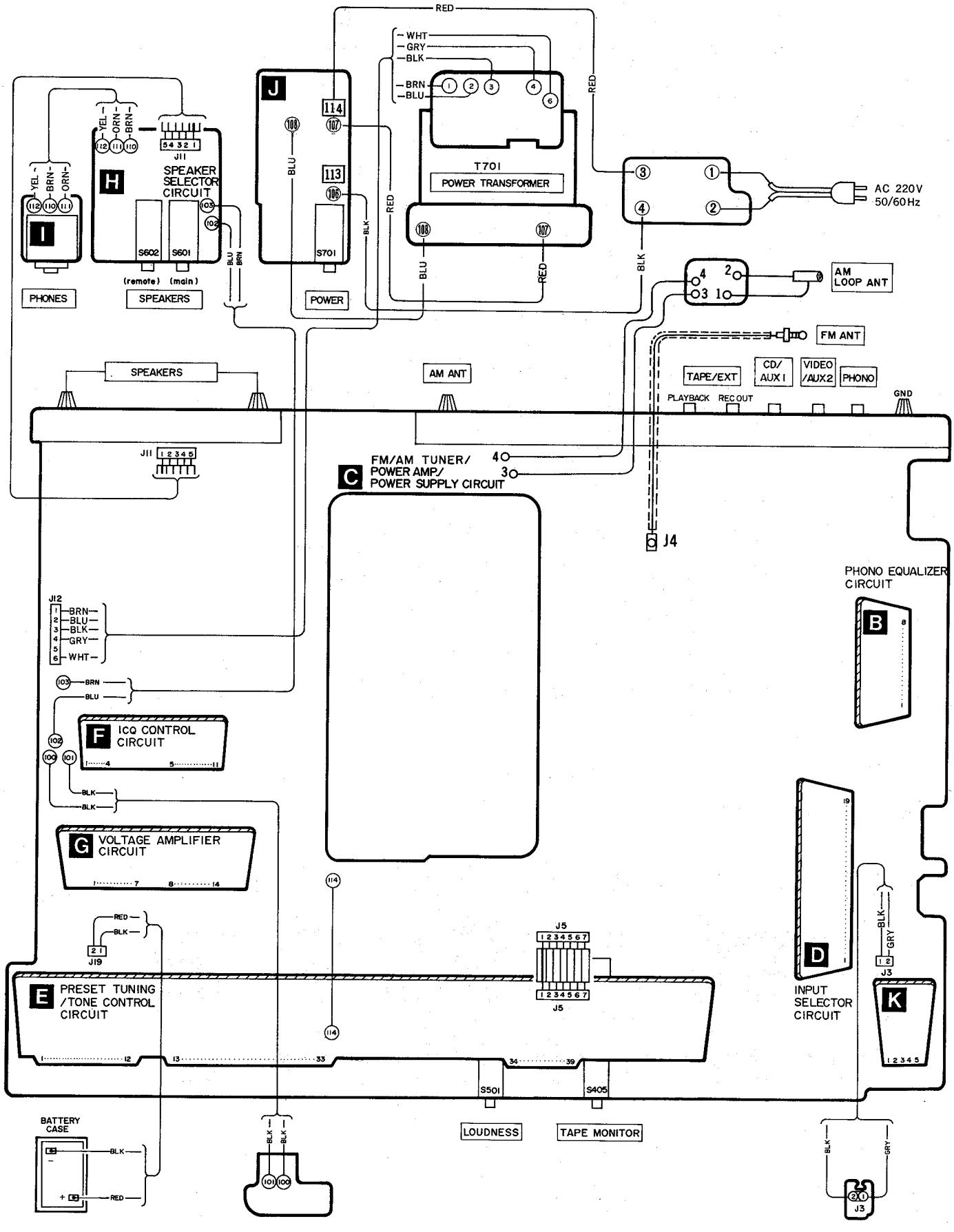


[Abb. 5]

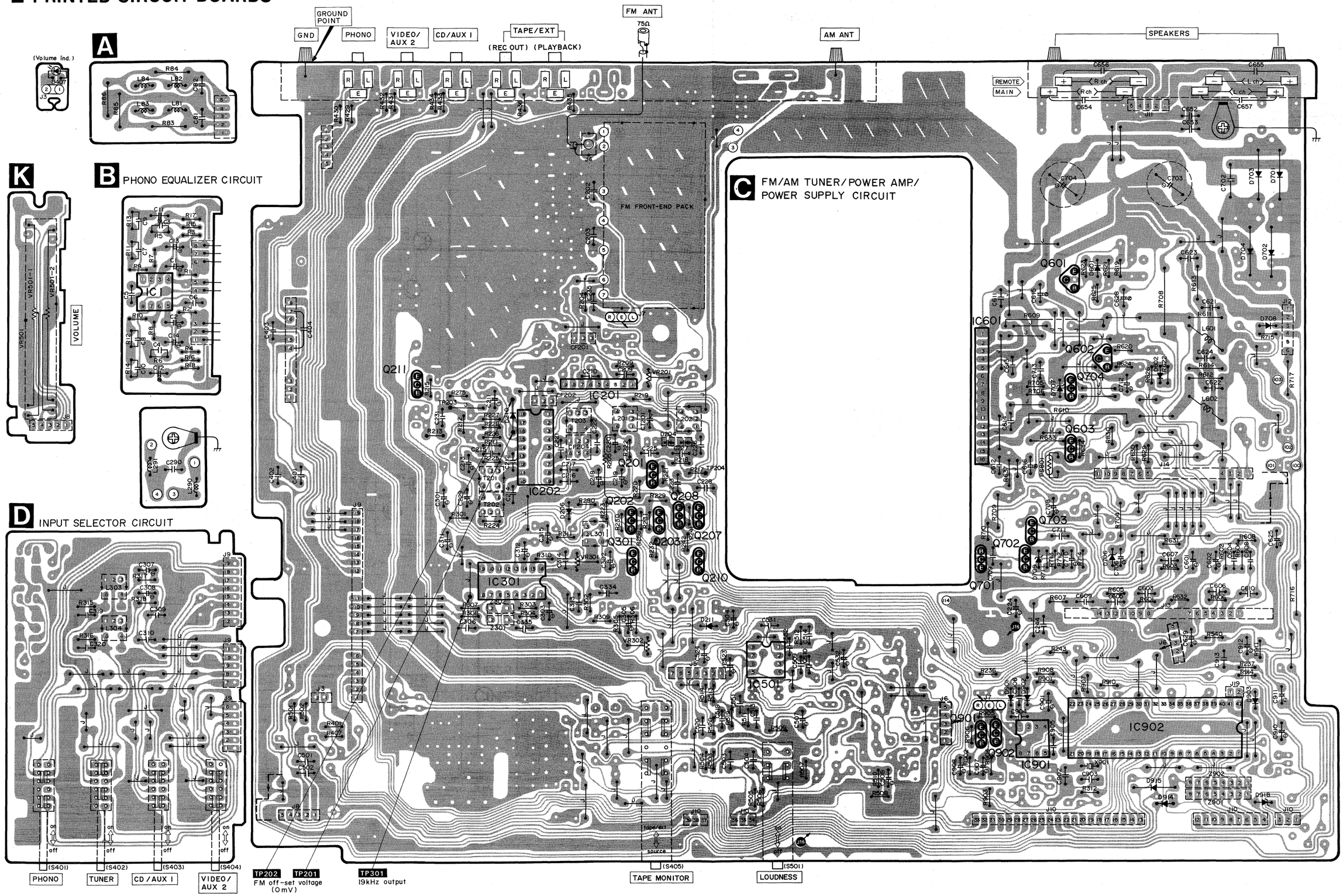
- **Fluorescent Display Tube (FL)**



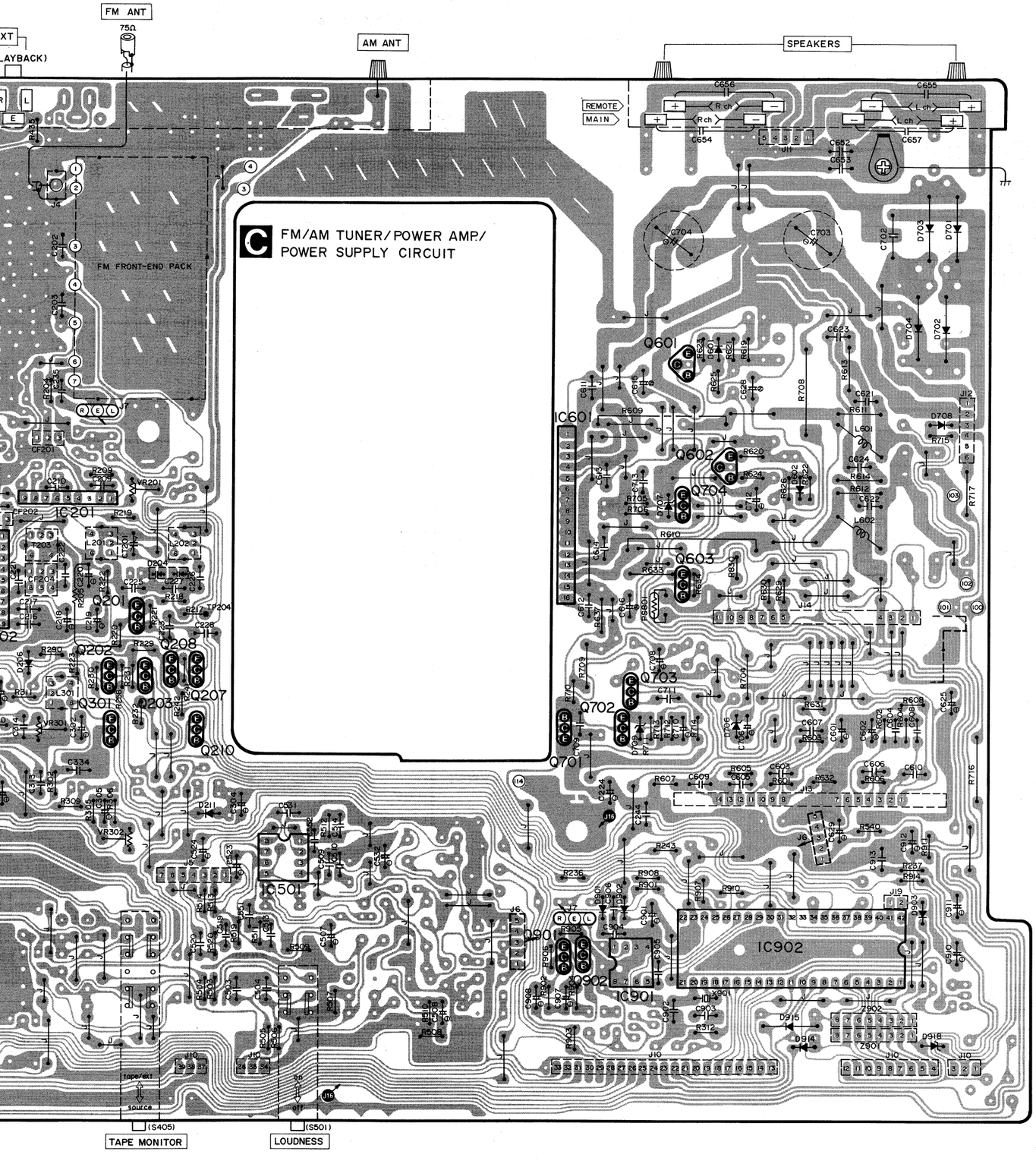
■ WIRING CONNECTION DIAGRAM



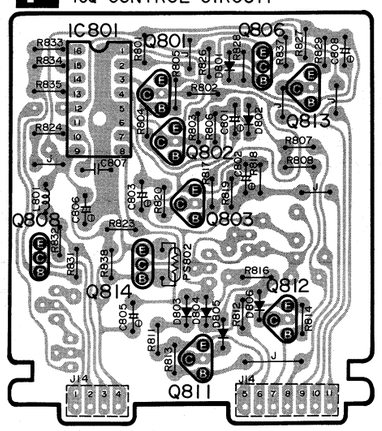
■ PRINTED CIRCUIT BOARDS



C FM/AM TUNER/POWER AMP/ POWER SUPPLY CIRCUIT

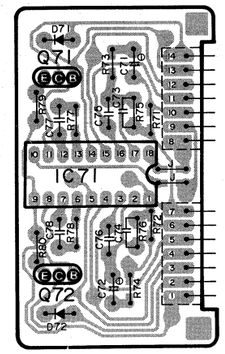


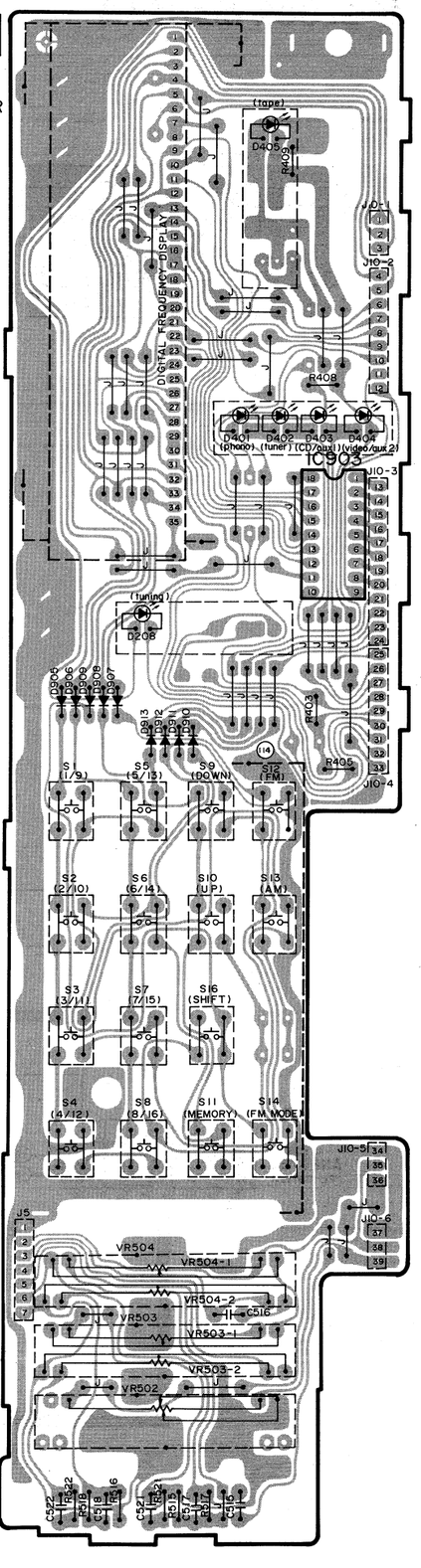
F IcQ CONTROL CIRCUIT



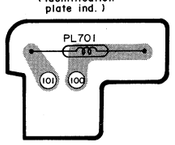
PRESET TUNING/ TONE CONTROL CIRCUIT E

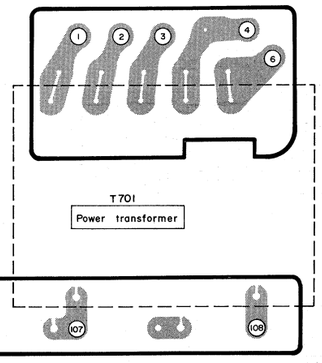
G VOLTAGE AMPLIFIER CIRCUIT



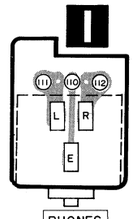


(Identification plate ind.)

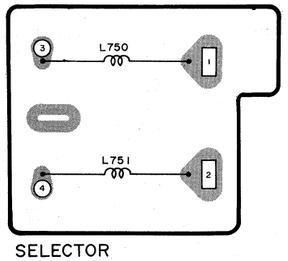




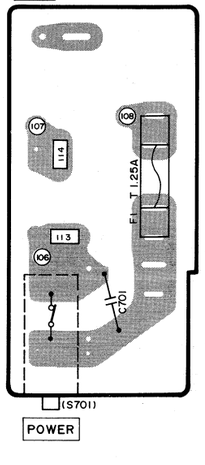
I



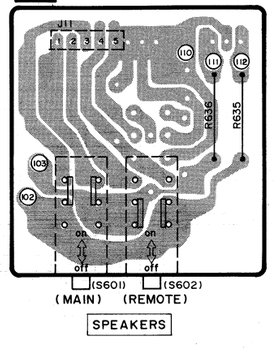
L



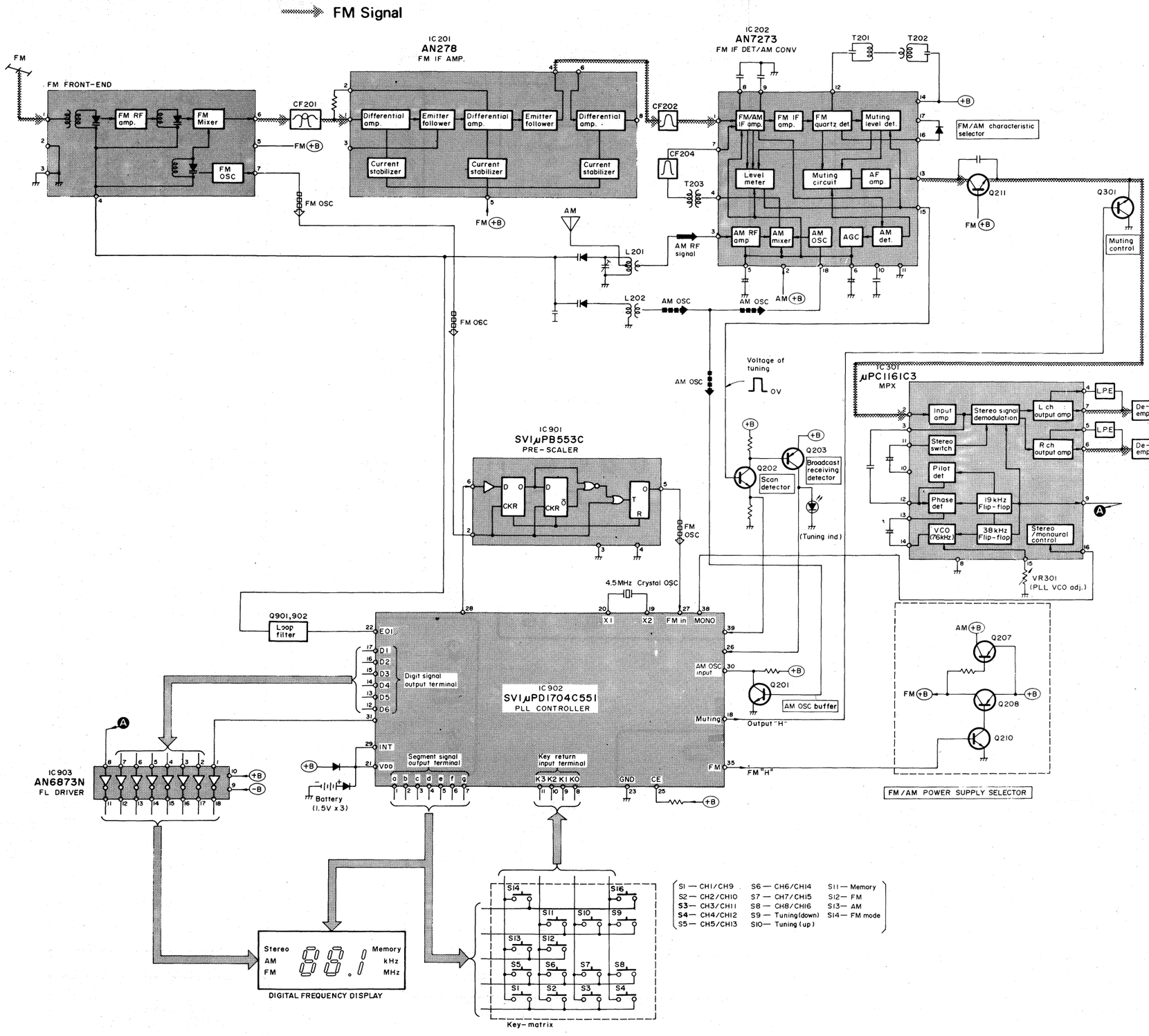
J

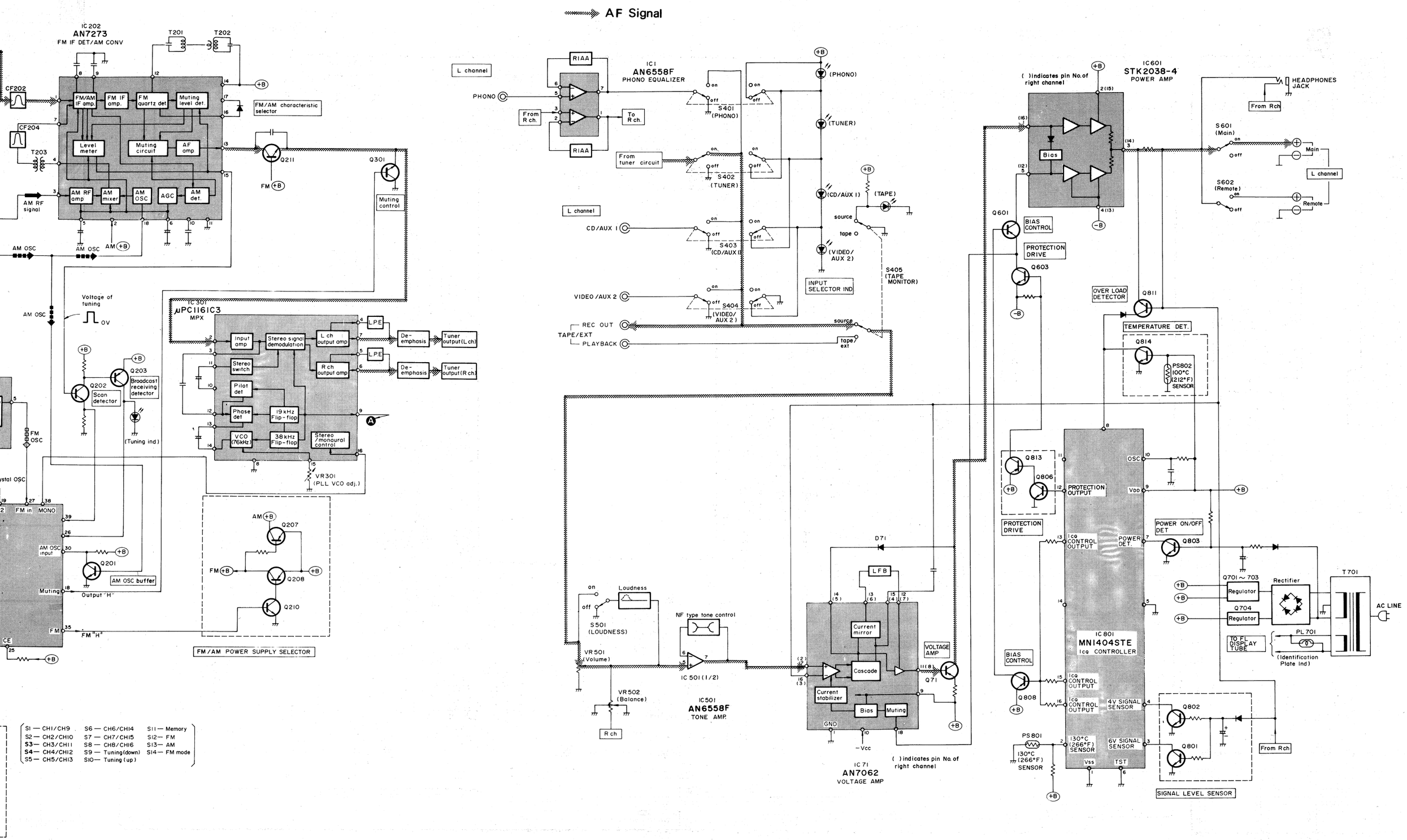


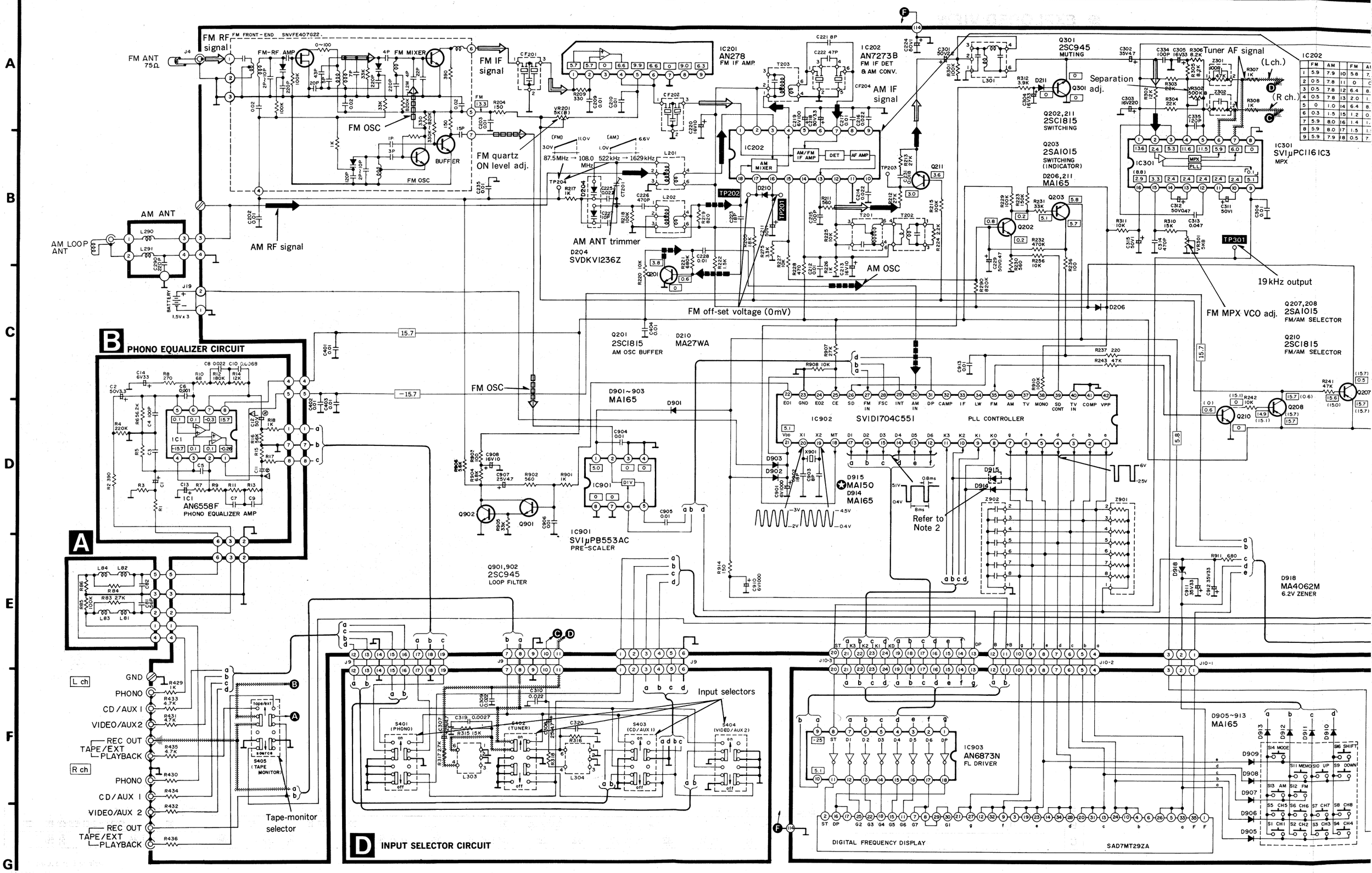
H SPEAKER SELECTOR CIRCUIT



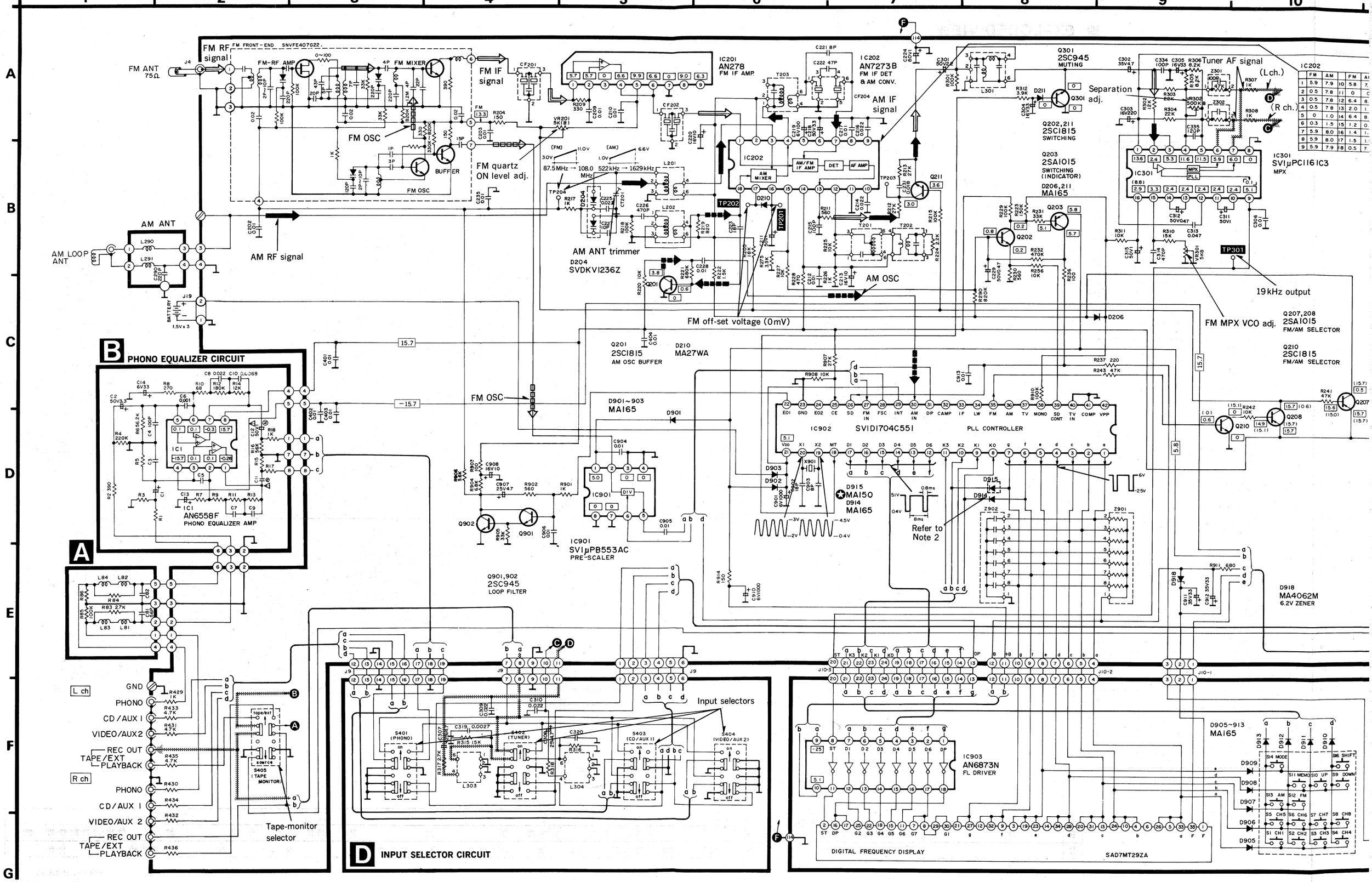
■ BLOCK DIAGRAM




AF Signal
IC 202
AN7273
FM IF DET/AM CONV
T201
T202
CF202
CF204
T203
FM/AM IF amp.
FM IF amp.
FM quartz det.
Muting level det.
Level meter
Muting circuit
AF amp
AM RF amp
AM mixer
AM OSC
AGC
AM det.
FM/AM characteristic selector
Q211
Q301
Muting control
AM RF signal
AM OSC
Voltage of tuning
0V
IC 301
μPC1161C3
MPX
Input amp
Stereo signal demodulation
L ch output amp
R ch output amp
Stereo switch
Pilot det
Phase det
19 kHz Flip-flop
VCO (76kHz)
38 kHz Flip-flop
Stereo /monaural control
De-emphasis
Tuner output (L ch)
Tuner output (R ch)
Q202
Scan detector
Q203
Broadcast receiving detector
(Tuning ind)
VR301 (PLL VCO adj.)
FM OSC
FM in
MONO
AM OSC input
Q201
AM OSC buffer
Muting
Output "H"
FM
FM "H"
Q207
Q208
Q210
FM/AM POWER SUPPLY SELECTOR
S1 — CH1/CH9
S2 — CH2/CH10
S3 — CH3/CH11
S4 — CH4/CH12
S5 — CH5/CH13
S6 — CH6/CH14
S7 — CH7/CH15
S8 — CH8/CH16
S9 — Tuning (down)
S10 — Tuning (up)
S11 — Memory
S12 — FM
S13 — AM
S14 — FM mode
L channel
PHONO
RIAA
From R ch.
To R ch.
IC1
AN6558F
PHONO EQUALIZER
S401 (PHONO)
From tuner circuit
S402 (TUNER)
CD/AUX 1
S403 (CD/AUX 1)
VIDEO/AUX 2
S404 (VIDEO/AUX 2)
REC OUT
TAPE/EXT
PLAYBACK
(PHONO)
(TUNER)
(CD/AUX 1)
(TAPE)
(VIDEO/AUX 2)
INPUT SELECTOR IND
S405 (TAPE MONITOR)
source
tape
tape ext
Loudness
S501 (LOUDNESS)
VR501 (Volume)
VR502 (Balance)
R ch
NF type tone control
IC 501 (1/2)
IC501
AN6558F
TONE AMP
D71
LFB
Current mirror
Cascade
Current stabilizer
Bias
Muting
GND
-Vcc
VOLTAGE AMP
Q71
IC 71
AN7062
VOLTAGE AMP
( ) indicates pin No. of right channel
IC601
STK2038-4
POWER AMP
( ) indicates pin No. of right channel
Bias
HEADPHONES JACK
From Rch
S601 (Main)
S602 (Remote)
Main
Remote
Q601
BIAS CONTROL
PROTECTION DRIVE
Q603
OVER LOAD DETECTOR
Q811
TEMPERATURE DET.
Q814
PS802 100°C (212°F) SENSOR
Q813
Q806
PROTECTION OUTPUT
PROTECTION DRIVE
OSC
VDD
POWER ON/OFF DET
Q803
Q701 ~ 703
Regulator
Q704
Rectifier
T701
AC LINE
PL701
TO FL DISPLAY TUBE
(Identification Plate Ind)
IC 801
MN1404STE
Ica CONTROLLER
Ica CONTROL OUTPUT
4V SIGNAL SENSOR
6V SIGNAL SENSOR
130°C (266°F) SENSOR
Vss
TST
Q808
PS801
Q802
Q801
SIGNAL LEVEL SENSOR



IC202	FM	AM	FM	AM
1	5.9	7.9	10	5.8
2	0.5	7.8	11	0
3	0.5	7.8	12	6.4
4	0.5	7.8	13	2.0
5	0	1.0	14	6.4
6	0.3	1.5	15	1.2
7	5.9	8.0	16	1.4
8	5.9	8.0	17	1.5
9	5.9	7.9	18	0.5



IC202	FM	AM	FM	AM
1	5.9	7.9	10	5.8
2	0.5	7.8	11	0
3	0.5	7.8	12	6.4
4	0.5	7.8	13	2.0
5	0	1.0	14	6.4
6	0.3	1.5	15	1.2
7	5.9	8.0	16	1.4
8	5.9	8.0	17	1.5
9	5.9	7.9	18	0.5

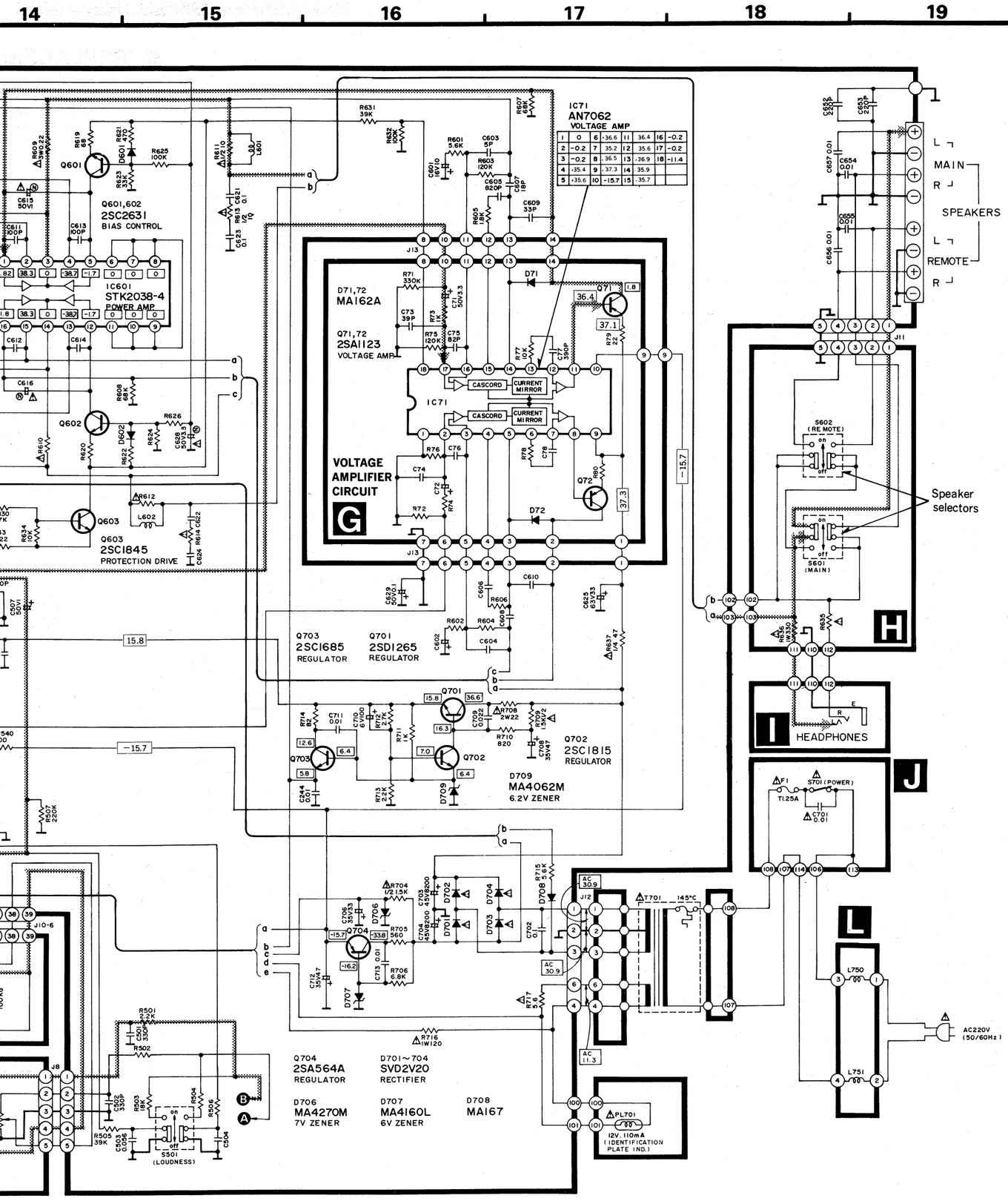
ICQ CONTROL CIRCUIT

Q301 2SC945 MUTING
Q202,211 2SC1815 SWITCHING
Q203 2SA1015 SWITCHING (INDICATOR)
D206,211 MA165
Tuner AF signal
Separation adj.
(L ch.)
(R ch.)
IC202
IC301 SVI μPC1161C3 MPX
TP301
19kHz output
FM MPX VCO adj.
Q207,208 2SA1015 FM/AM SELECTOR
Q210 2SC1815 FM/AM SELECTOR
CONTROLLER
D915
D914
Z902
Z901
D918 MA4062M 6.2V ZENER
SAD7MT29ZA
D905~913 MA165
D907 LN217RP VOLUME IND.
D401~404 LN846RP INPUT SELECTOR IND
D405 LN846RP TAPE IND.
D208 LN846RP TUNING IND
D208 TUNING
D405 TAPE
FM/AM TUNER/ POWER AMP./POWER SUPPLY CIRCUIT
PRESET TUNING/ TONE CONTROL CIRCUIT

Q808 2SA992 BIAS CONTROL
Q806 2SC1815 PROTECTION DRIVE
Q813 2SA992 PROTECTION DRIVE
D801 MA165
Q814 2SC1815 SWITCHING
IC801 MN1404STE ICQ CONTROL
Q802
Q801
Q803 2SC1815 POWER ON/OFF DET.
D806 Q812
Q811,812 2SC1845 OVER LOAD DET
Q801,802 2SC1815 SIGNAL LEVEL SENSOR
D802~806 MA167
PS801 130°C (266°F) SENSOR
PS802 100°C (212°F SENSOR)
Temperature det.
Temperature det.

IC501 AN6558F OPERATION AMP.
D918 MA4062M 6.2V ZENER

D601,602 MA165
Q601 2SC2631 BIAS CONTROL
IC601 STK2038-4 POWER AMP.
Q602
Q603 2SC1845 PROTECTION DRIVE
IC71 AN7062 VOLTAGE AMP.
D71,72 MA162A
Q71,72 2SA1123 VOLTAGE AMP.
VOLTAGE AMPLIFIER CIRCUIT
Q703 2SC1685 REGULATOR
Q701 2SD1265 REGULATOR
Q702 2SC1815 REGULATOR
D709 MA4062M 6.2V ZENER
Q704 2SA564A REGULATOR
D701~704 SVD2V20 RECTIFIER
D706 MA4270M 7V ZENER
D707 MA4160L 6V ZENER
D708 MA167
S501 (LOUDNESS)
T701 145°C
PL701
12V. 110mA (IDENTIFICATION PLATE IND.)



■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

* The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with ✪ mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part, please use the part No. in the replacement part list.

Note 1:

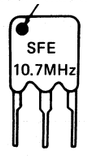
1. **S1 ~ S8** : Preset tuning switch.
   (S1 — CH 1/CH 9 S4 — CH 4/CH 12 S7 — CH 7/CH 15
   S2 — CH 2/CH 10 S5 — CH 5/CH 13 S8 — CH 8/CH 16
   S3 — CH 3/CH 11 S6 — CH 6/CH 14)
   * With it lightly pushed and released, the 1 ~ 8 CH (front stations) are received.
   * With it continuously pushed and released, the 9 ~ 16 CH (back stations) are received.
2. **S9, 10** : Tuning switch
   (S9 — down (tuning to lower frequency)
   S10 — up (tuning to higher frequency))
3. **S11** : Memory switch.
   (manual ⟷ auto)
4. **S12, 13** : Band selector switch
   S12 — FM, S13 — AM
5. **S14** : FM mode selector switch.
   (auto ⟷ mono)
6. **S16** : FM frequency-shift selector
   (normal ⟷ +25 kHz)
7. **S401 ~ S404** : Input selectors switch in "**tuner**" position.
   (S401 — phono, S403 — CD/aux 1.
   S402 — tuner, S404 — Video/aux 2)
8. **S405** : Tape-monitor selector switch in "**source**" position.
   source ⟷ tape/ext
9. **S501** : Loudness switch in "**off**" position.
   on ⟷ off
10. **S601** : Main speaker switch in "**on**" position.
    on ⟷ off
11. **S602** : Remote speaker switch in "**off**" position.
    on ⟷ off
12. **S701** : Power switch in "**on**" position.
13. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    * Figures in ▭ stand for DC voltage in FM signal (monaural signal) reception mode.
    * Figures in ⌐ ⌙ stand for DC voltage in FM stereo signal reception mode.
    * Figures in ( ) stand for DC voltage in AM signal reception mode.
14. —— Positive and negative voltage line
    ⇨ FM signal ⇨ FM OSC
    ➡ AM signal ➡ AM OSC
15. Important safety notice:
    Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

Note 2:

● **Use of ceramic filters in pairs**

The ceramic filters (CF201, CF202) for FM-IF circuit are available in two ranks. For this machine, be sure to use the ceramics of the same rank in a pair.
At repairing and replacement, pay close attention to the diode (D915) for use as different diode must be used depending on each rank of the ceramic filters.

Color marking

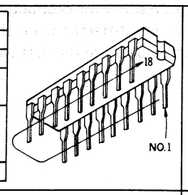


RANK (Color)	D915	CENTER FREQUENCY
Red	X	10.70 MHz
Black	O	10.65 MHz

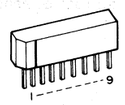
Note: O Mark: Diode is used.
X Mark: Diode is not used.

■ TERMINAL GUIDE OF TRANSISTORS, DIODES AND IC'S

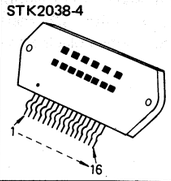
AN6558F	8 pin
SVIUPB553C-E	8 pin
AN6558F	8 pin
MN1404STE	16 pin
SVIUPC1161C3	
AN7273B	18 pin
AN6873N	
AN7062	
SVID1704C551	42 pin



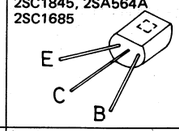
AN278



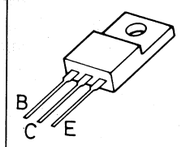
STK2038-4



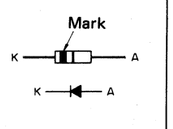
2SA1123, 2SA1015, 2SC945 2SC2631, 2SA992 2SC1845, 2SA564A 2SC1685



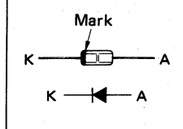
2SD1265



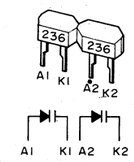
MA162A



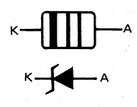
MA165, MA27WA



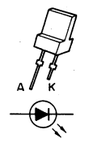
SVDKV1236Z



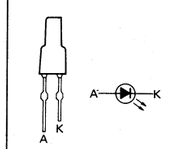
MA4062M, MA4270, MA4160L



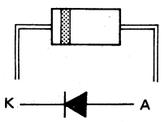
LN217RP



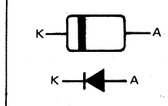
LN846RP



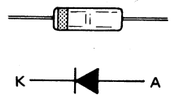
SVDS2V20



MA167



MA150



■ RESISTORS AND CAPACITORS

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "Ⓢ" mark is service standard parts and may differ from production parts.
4. The unit of resistance is Ω , (ohm). K = 1000Ω, M = 1000kΩ.
5. The unit of capacitance is μF. (microfarad). P = 10^{-6} μF.
6. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all area.

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

ERG	2	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value

Resistor Type		Wattage		Tolerance	
ERD	: Carbon	S1	: 1/2W	G	: ± 2%
ERO	: Metal Film	10	: 1/8W	J	: ± 5%
ERX	: Metal Film	12	: 1/2W		
ERG	: Metal Oxide	25	: 1/4W		
		1	: 1W		
		2	: 2W		

ERD10TLJ□□□ → Chip type carbon
ERO10MKG□□□ → Chip type metal film

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity

ECEA	50	M	R47	R
Type	Voltage	Peculiarity	Value	Special use

Capacitor Type		Voltage				Tolerance	
		ECEA Type		Other			
ECEA	: Electrolytic	OJ	: 6.3V	1H	: 50V	C	: ± 0.25pF
ECCD	: Ceramic	1A	: 10V	2H	: 500V	J	: ± 5%
ECKD	: Ceramic	1C	: 16V	1	: 100V	K	: ± 10%
ECQM	: Polyester	1E	: 25V	KC	: 400V AC	Z	: +80%, −20%
ECQP	: Polypropylene	1H	: 50V			Y	: ± 22%
ECET	: Electrolytic	1V	: 35V				
ECEA...N	: Non Polar Electrolytic	50	: 50V				
		25	: 25V				

Ref. No.	Part No.	Value
RESISTORS		
R1, 2	ERD10TLJ391U	390
R3, 4	ERD10TLJ224U	220K
R5, 6	ERO10MKG5622	56.2K
R7, 8	ERD10TLJ271U	270
R9, 10	ERD10TLJ680U	68
R11, 12	ERD10TLJ184U	180K
R13, 14	ERD10TLJ123U	12K
R15, 16	ERD10TLJ563U	56K
R17, 18	ERD10TLJ102U	1K
R71, 72	ERD10TLJ334U	330K
R73, 74	ERD10TLJ102U	1K
R75, 76	ERD10TLJ124U	120K
R77, 78	ERD10TLJ103U	10K
R79, 80	ERD10TLJ220U	22
R83, 84 Ⓢ	ERD25FJ272	2.7K
R85, 86 Ⓢ	ERD25TJ104	100K
R204	ERDS2TJ151	150
R205 Ⓢ	ERD25TJ183	18K
R209	ERDS2TJ331	330
R211	ERDS2TJ561	560
R212, 213	ERDS2TJ273	27K
R215	ERDS2TJ104	100K
R217	ERDS2TJ102	1K
R218	ERDS2TJ104	100K
R219	ERDS2TJ821	820
R220	ERDS2TJ103	10K
R221	ERDS2TJ684	680K
R222	ERDS2TJ152	1.5K
R223	ERDS2TJ154	150K
R224	ERDS2TJ222	2.2K
R225	ERDS2TJ103	10K
R226	ERDS2TJ102	1K
R227	ERDS2TJ103	10K
R228	ERDS2TJ471	470
R229	ERDS2TJ104	100K
R230	ERDS2TJ561	560
R231	ERDS2TJ333	33K
R232	ERDS2TJ474	470K
R236	ERDS2TJ101	100
R237	ERDS2TJ221	220
R241	ERDS2TJ473	47K
R242	ERDS2TJ103	10K
R243	ERDS2TJ473	47K
R256	ERDS2TJ103	10K
R275	ERDS2TJ332	3.3K
R290	ERDS2TJ824	820K
R301	ERDS2TJ104	100K
R302	ERDS2TJ123	12K
R303, 304	ERDS2TJ223	22K
R305, 306	ERDS2TJ822	8.2K
R307, 308	ERDS2TJ102	1K
R309	ERDS2TJ151	150
R310	ERDS2TJ153	15K
R311	ERDS2TJ103	10K
R312	ERDS2TJ392	3.9K
R315, 316	ERDS2TJ153	15K
R317, 318	ERDS2TJ272	2.7K
R401	ERDS2TJ102	1K
R403	ERDS2TJ102	1K
R405	ERDS2TJ102	1K
R407	ERDS2TJ471	470
R408, 409	ERDS2TJ471	470
R429, 430	ERDS2TJ102	1K
R431, 432	ERDS2TJ472	4.7K
R433, 434	ERDS2TJ472	4.7K
R435, 436	ERDS2TJ472	4.7K
R501, 502	ERDS2TJ222	2.2K
R503, 504	ERDS2TJ183	18K
R505, 506	ERDS2TJ393	39K
R507, 508	ERDS2TJ224	220K
R509, 510	ERDS2TJ474	470K
R511, 512	ERDS2TJ474	470K
R513, 514	ERDS2TJ223	22K
R515, 516	ERDS2TJ332	3.3K
R517, 518	ERDS2TJ223	22K
R519, 520	ERDS2TJ392	3.9K
R521, 522	ERDS2TJ102	1K
R540	ERDS2TJ101	100
R601, 602	ERDS2TJ562	5.6K
R603, 604	ERDS2TJ124	120K
R605, 606	ERDS2TJ182	1.8K
R607, 608	ERDS2TJ683	68K
R609, 610	ERX3ANJR22	0.22
R611, 612 ⚠	ERDS1FJ100	10
R613, 614 ⚠	ERDS1FJ100	10
R619, 620	ERDS2TJ680	68
R612, 622	ERDS2TJ471	470
R623, 624	ERDS2TJ333	33K
R625, 626	ERDS2TJ104	100K
R629, 630	ERDS2TJ331	330
R631	ERDS2TJ393	39K
R632	ERDS2TJ104	100K
R633 ⚠	ERD25FJ221	220
R634	ERDS2TJ103	10K
R635, 636 Ⓢ	ERG1ANJ331	330
R637 ⚠	ERD25FJ470	47
R704 ⚠	ERDS1FJ152	1.5K
R705	ERDS2TJ561	560
R706	ERDS2TJ682	6.8K
R708 Ⓢ	ERG2ANJ220	22
R709 ⚠	ERDS1FJ152	1.5K
R710	ERDS2TJ821	820
R711	ERDS2TJ102	1K
R712	ERDS2TJ272	2.7K
R713	ERDS2TJ222	2.2K
R714	ERDS2TJ820	82
R715	ERDS2TJ562	5.6K
R716 Ⓢ	ERG1ANJ121	120
R717	ERD2FCJ5R6	5.6
R801, 802	ERDS2TJ103	10K
R803	ERDS2TJ103	10K
R804	ERDS2TJ183	18K
R805, 806	ERDS2TJ333	33K
R807, 808	ERDS2TJ683	68K
R811, 812	ERDS2TJ472	4.7K
R813, 814	ERDS2TJ331	330
R816	ERDS2TJ822	8.2K
R817	ERDS2TJ223	2.2K
R818	ERDS2TJ123	12K
R819	ERDS2TJ223	22K
R820	ERDS2TJ101	100
R823	ERDS2TJ394	390K
R824	ERDS2TJ153	15K
R826	ERDS2TJ333	33K
R827	ERDS2TJ332	3.3K
R828	ERDS2TJ823	82K
R829	ERDS2TJ103	10K
R830	ERDS2TJ473	47K
R831	ERDS2TJ682	6.8K
R832	ERDS2TJ822	8.2K
R833, 834	ERDS2TJ223	22K
R835	ERDS2TJ223	22K
R837	ERDS2TJ103	10K
R838	ERDS2TJ223	22K
R901	ERDS2TJ102	1K
R902	ERDS2TJ561	560
R903	ERDS2TJ101	100
R904	ERDS2TJ682	6.8K
R905	ERDS2TJ333	33K
R906	ERDS2TJ562	5.6K
R907	ERDS2TJ273	27K
R908	ERDS2TJ103	10K
R910	ERDS2TJ104	100K
R911	ERDS2TJ681	680
R914	ERDS2TJ151	150

Ref. No.	Part No.	Value
CAPACITORS		
C1, 2	ECEA1HU3R3	3.3
C3, 4 Ⓢ	ECCD1H101K	100P
C5, 6 Ⓢ	ECKD1H102ZF	0.001
C7, 8 Ⓢ	ECQM1H223JZ	0.022
C9, 10 Ⓢ	ECQM1H682JZ	0.0068
C11, 12	ECEA1HN010S	1
C13, 14	ECEA0JU330	33
C71, 72	ECEA1HU3R3	3.3
C73, 74 Ⓢ	ECCD1H390K	39P
C75, 76 Ⓢ	ECCD1H820K	82P
C77, 78 Ⓢ	ECKD1H391KB	390P
C81, 82 Ⓢ	ECCD1H560K	56P
C202 Ⓢ	ECKD1H103ZF	0.01
C203 Ⓢ	ECKD1H103ZF	0.01
C209, 210 Ⓢ	ECKD1H103ZF	0.01
C211	ECEA1HU010	1
C212 Ⓢ	ECKD1H103ZF	0.01
C213	ECEA1CU100	10
C214 Ⓢ	ECKD1H223ZF	0.022
C215 Ⓢ	ECCD1H101K	100P
C216 Ⓢ	ECKD1H223ZF	0.022
C217 Ⓢ	ECKD1H103ZF	0.01
C218	ECEA1HU3R3	3.3
C219	ECEA0JU101	100
C220	ECEA1CU100	10
C221 Ⓢ	ECCD1H080CC	8P
C222 Ⓢ	ECCD1H470K	47P
C223 Ⓢ	ECCD1H180KC	18P
C224	ECEA1HU010	1
C225 Ⓢ	ECKD1H223ZF	0.022
C226	ECQP1471JZ	470P
C227 Ⓢ	ECCD1H101KC	10P
C228 Ⓢ	ECKD1H103ZF	0.01
C229	ECEA1HUR47	0.47
C231 Ⓢ	ECQM1H183JZ	0.018
C235	ECKD1H103ZF	0.01
C244 Ⓢ	ECKD1H103ZF	0.01
C290 Ⓢ	ECCD1H221K	220P
C301	ECEA1HU2R2	2.2
C302	ECEA1VU4R7	4.7
C303	ECEA1CU101	100
C304, 305	ECEA1CU330	33
C306 Ⓢ	ECKD1H103ZF	0.01
C307, 308	ECEA1EU4R7	4.7
C309, 310 Ⓢ	ECQM1H223JZ	0.022
C311	ECEA1HU010	1
C312	ECEA1HUR47	0.47
C313	ECQM1H473JZ	0.047
C314	ECQP1471JZ	470P
C315	ECEA1HU010	1
C319, 320 Ⓢ	ECQM1H272JZ	0.027
C334 Ⓢ	ECCD1H101K	100P
C335 Ⓢ	ECCD1H121K	120P
C401, 402	ECKD1H103ZF	0.01
C403	ECKD1H103ZF	0.01
C404 Ⓢ	ECKD1H103ZF	0.01
C501, 502	ECKD1H331KB	330P
C503, 504	ECQM1H563JZ	0.056
C507, 508	ECEA1HU010	1
C509, 510	ECCD1H101K	100P
C513, 514	ECCD1H101K	100P
C515, 516	ECQM1H183JZ	0.018
C517, 518	ECQM1H104JZ	0.1
C519, 520	ECQM1H332JZ	0.0033
C521, 522	ECQM1H333JZ	0.033
C523, 524	ECEA1HU3R3	3.3
C531	ECKD1H103ZF	0.01
C532	ECEA1CU100	10
C551, 552	ECKD1H221KB	220P
C601, 602	ECEA1CU100	10
C603, 604	ECCD1H050CC	5P
C605, 606	ECKD1H821KB	820P
C607, 608	ECCD1H180KC	18P
C609, 610	ECCD1H330K	33P
C611, 612	ECCD1H101K	100P
C613, 614	ECCD1H101K	100P
C615, 616	ECEA1HN010S	1
C621, 622	ECQM1H104JZ	0.1
C623, 624	ECQM1H104JZ	0.1
C625	ECEA1JU330	33
C628	ECEA1HN3R3S	3.3
C629	ECEA1HU0R1	0.1
C652, 653 Ⓢ	ECKD1H221KB	220P
C654, 655 Ⓢ	ECKD1H103ZF	0.01
C656, 657 Ⓢ	ECKD1H103ZF	0.01
C701	ECKDKC103PF2	0.01
C702	ECQE1104KN	0.1
C703, 704	ECETS45V822U	8200
C706	ECEA1VU330	33
C708	ECEA1VU470	47
C709	ECKD1H223ZF	0.022
C710	ECEAOJU101	100
C711	ECKD1H103ZF	0.01
C712	ECEA1VU470	47
C713	ECKD1H103ZF	0.01
C801, 802	ECEA1HU3R3	3.3
C803	ECEA1HU3R3	3.3
C805	ECEA1HU010	1
C806	ECEA0JU471	470
C807	ECCD1H101K	100P
C808	ECEA1CU100	10
C901	ECEA0JU102	1000
C902	ECCD1H180KC	18P
C903	ECCD1H080CC	8P
C904, 905	ECKD1H103ZF	0.01
C906	ECKD1H103ZF	0.01
C907	ECEA25M4R7R	4.7
C908	ECEA1CU100	10
C910	ECEAOJU102	1000
C911, 912	ECEA1VU330	33

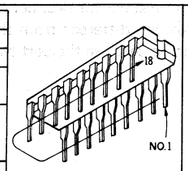
■ REPLACEM

Notes: 1. Part numbers are
Please use this pa
2. Important safety
Components ide
important for sa
use only manufa

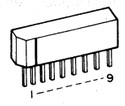
Ref. No.	Part No.
INTEGRATED CIRCUITS	
IC1	AN6558F
IC71	AN7062
IC201	AN278
IC202	AN7273
IC301	SVIUPC1161C
IC501	AN6558F
IC601	STK2038-4
IC801	MN1404STE
IC901	UPB553AC
IC902	SVID1704C55
IC903	AN6873N
TRANSISTORS	
Q71, 72	2SA1123-R
Q201, 202, 210, 211, 702	2SC1815-Y
Q203, 207, 208	2SA1015Y
Q301, 901, 902	2SC1815GR
Q601, 602	2SC2631-Q
Q603, 811, 812 Ⓢ	2SC1845-E
Q701	2SD1265-0
Q703	2SC1685-QN
Q704	2SA564A-QN
Q801~803, 806, 814	2SC1815-Y
Q808, 813	2SA992E
DIODES	
D71, 72 Ⓢ	MA162A
D204	SVDKV1236Z
D208, 401~405	LN846RP
D210	MA27W-A
D206, 211, 601 602, 901~903, 914	MA165
D407	LN217RP
D701~704 ⚠	SVDS2V20
D706	MA4270
D707	MA4160-L
D708	MA167
D709, 918	MA4062-M
D801, 905~913	MA165
D802~806	MA167
D915 Ⓢ	MA162A
COILS	
L81~84	ELQS181KB
L201	SLA2B1-P
L202	SL02B7-P
L290, 291	SLQZ12G1-D
L301	SLM1B1-P
L303, 304	SLM5B2-P
L601, 602	SLQY07G-30
L750, 751	SLQX400-D
L801	SLQX101-3M

■ TERMINAL GUIDE OF TRANSISTORS, DIODES AND IC'S

AN6558F	8 pin
SVIUPB553C-E	8 pin
AN6558F	8 pin
MN1404STE	16 pin
SVIUPC1161C3	
AN7273B	18 pin
AN6873N	
AN7062	
SVID1704C551	42 pin



AN278



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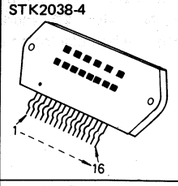

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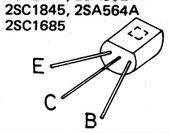
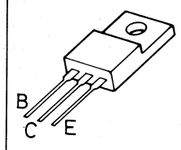
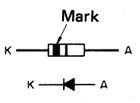


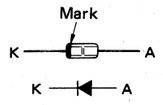
2SD1265



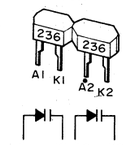
MA162A



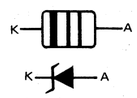
MA165, MA27WA



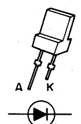
SVDKV1236Z



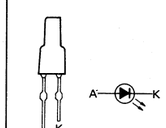
MA4062M, MA4270, MA4160L



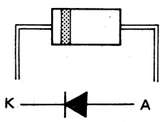
LN217RP



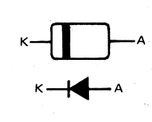
LN846RP



SVDS2V20



MA167



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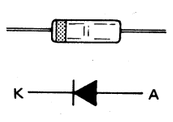


■ RESISTORS AND CAPACITORS

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "Ⓢ" mark is service standard parts and may differ from production parts.
4. The unit of resistance is Ω , (ohm). K = 1000Ω, M = 1000kΩ.
5. The unit of capacitance is μF. (microfarad). P = 10^{-6} μF.
6. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all area.

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

ERG	2	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value

Resistor Type		Wattage		Tolerance	
ERD	: Carbon	S1	: 1/2W	G	: ± 2%
ERO	: Metal Film	10	: 1/8W	J	: ± 5%
ERX	: Metal Film	12	: 1/2W		
ERG	: Metal Oxide	25	: 1/4W		
		1	: 1W		
		2	: 2W		

ERD10TLJ□□□ → Chip type carbon
ERO10MKG□□□ → Chip type metal film

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity

ECEA	50	M	R47	R
Type	Voltage	Peculiarity	Value	Special use

Capacitor Type		Voltage				Tolerance	
		ECEA Type		Other			
ECEA	: Electrolytic	OJ	: 6.3V	1H	: 50V	C	: ± 0.25pF
ECCD	: Ceramic	1A	: 10V	2H	: 500V	J	: ± 5%
ECKD	: Ceramic	1C	: 16V	1	: 100V	K	: ± 10%
ECQM	: Polyester	1E	: 25V	KC	: 400V AC	Z	: +80%, −20%
ECQP	: Polypropylene	1H	: 50V			Y	: ± 22%
ECET	: Electrolytic	1V	: 35V				
ECEA...N	: Non Polar Electrolytic	50	: 50V				
		25	: 25V				

Ref. No.	Part No.	Value
RESISTORS		
R1, 2	ERD10TLJ391U	390
R3, 4	ERD10TLJ224U	220K
R5, 6	ERO10MKG5622	56.2K
R7, 8	ERD10TLJ271U	270
R9, 10	ERD10TLJ680U	68
R11, 12	ERD10TLJ184U	180K
R13, 14	ERD10TLJ123U	12K
R15, 16	ERD10TLJ563U	56K
R17, 18	ERD10TLJ102U	1K
R71, 72	ERD10TLJ334U	330K
R73, 74	ERD10TLJ102U	1K
R75, 76	ERD10TLJ124U	120K
R77, 78	ERD10TLJ103U	10K
R79, 80	ERD10TLJ220U	22
R83, 84 Ⓢ	ERD25FJ272	2.7K
R85, 86 Ⓢ	ERD25TJ104	100K
R204	ERDS2TJ151	150
R205 Ⓢ	ERD25TJ183	18K
R209	ERDS2TJ331	330
R211	ERDS2TJ561	560
R212, 213	ERDS2TJ273	27K
R215	ERDS2TJ104	100K
R217	ERDS2TJ102	1K
R218	ERDS2TJ104	100K
R219	ERDS2TJ821	820
R220	ERDS2TJ103	10K
R221	ERDS2TJ684	680K
R222	ERDS2TJ152	1.5K
R223	ERDS2TJ154	150K
R224	ERDS2TJ222	2.2K
R225	ERDS2TJ103	10K
R226	ERDS2TJ102	1K
R227	ERDS2TJ103	10K
R228	ERDS2TJ471	470
R229	ERDS2TJ104	100K
R230	ERDS2TJ561	560
R231	ERDS2TJ333	33K
R232	ERDS2TJ474	470K
R236	ERDS2TJ101	100
R237	ERDS2TJ221	220
R241	ERDS2TJ473	47K
R242	ERDS2TJ103	10K
R243	ERDS2TJ473	47K
R256	ERDS2TJ103	10K
R275	ERDS2TJ332	3.3K
R290	ERDS2TJ824	820K
R301	ERDS2TJ104	100K
R302	ERDS2TJ123	12K
R303, 304	ERDS2TJ223	22K
R305, 306	ERDS2TJ822	8.2K
R307, 308	ERDS2TJ102	1K
R309	ERDS2TJ151	150
R310	ERDS2TJ153	15K
R311	ERDS2TJ103	10K
R312	ERDS2TJ392	3.9K
R315, 316	ERDS2TJ153	15K
R317, 318	ERDS2TJ272	2.7K
R401	ERDS2TJ102	1K
R403	ERDS2TJ102	1K
R405	ERDS2TJ102	1K
R407	ERDS2TJ471	470
R408, 409	ERDS2TJ471	470
R429, 430	ERDS2TJ102	1K
R431, 432	ERDS2TJ472	4.7K
R433, 434	ERDS2TJ472	4.7K
R435, 436	ERDS2TJ472	4.7K
R501, 502	ERDS2TJ222	2.2K
R503, 504	ERDS2TJ183	18K
R505, 506	ERDS2TJ393	39K
R507, 508	ERDS2TJ224	220K
R509, 510	ERDS2TJ474	470K
R511, 512	ERDS2TJ474	470K
R513, 514	ERDS2TJ223	22K
R515, 516	ERDS2TJ332	3.3K
R517, 518	ERDS2TJ223	22K
R519, 520	ERDS2TJ392	3.9K
R521, 522	ERDS2TJ102	1K
R540	ERDS2TJ101	100
R601, 602	ERDS2TJ562	5.6K
R603, 604	ERDS2TJ124	120K
R605, 606	ERDS2TJ182	1.8K
R607, 608	ERDS2TJ683	68K
R609, 610	ERX3ANJR22	0.22
R611, 612 ⚠	ERDS1FJ100	10
R613, 614 ⚠	ERDS1FJ100	10
R619, 620	ERDS2TJ680	68
R612, 622	ERDS2TJ471	470
R623, 624	ERDS2TJ333	33K
R625, 626	ERDS2TJ104	100K
R629, 630	ERDS2TJ331	330
R631	ERDS2TJ393	39K
R632	ERDS2TJ104	100K
R633 ⚠	ERD25FJ221	220
R634	ERDS2TJ103	10K
R635, 636 Ⓢ	ERG1ANJ331	330
R637 ⚠	ERD25FJ470	47
R704 ⚠	ERDS1FJ152	1.5K
R705	ERDS2TJ561	560
R706	ERDS2TJ682	6.8K
R708 Ⓢ	ERG2ANJ220	22
R709 ⚠	ERDS1FJ152	1.5K
R710	ERDS2TJ821	820
R711	ERDS2TJ102	1K
R712	ERDS2TJ272	2.7K
R713	ERDS2TJ222	2.2K
R714	ERDS2TJ820	82
R715	ERDS2TJ562	5.6K
R716 Ⓢ	ERG1ANJ121	120
R717	ERD2FCJ5R6	5.6
R801, 802	ERDS2TJ103	10K
R803	ERDS2TJ103	10K
R804	ERDS2TJ183	18K
R805, 806	ERDS2TJ333	33K
R807, 808	ERDS2TJ683	68K
R811, 812	ERDS2TJ472	4.7K
R813, 814	ERDS2TJ331	330
R816	ERDS2TJ822	8.2K
R817	ERDS2TJ223	2.2K
R818	ERDS2TJ123	12K
R819	ERDS2TJ223	22K
R820	ERDS2TJ101	100
R823	ERDS2TJ394	390K
R824	ERDS2TJ153	15K
R826	ERDS2TJ333	33K
R827	ERDS2TJ332	3.3K
R828	ERDS2TJ823	82K
R829	ERDS2TJ103	10K
R830	ERDS2TJ473	47K
R831	ERDS2TJ682	6.8K
R832	ERDS2TJ822	8.2K
R833, 834	ERDS2TJ223	22K
R835	ERDS2TJ223	22K
R837	ERDS2TJ103	10K
R838	ERDS2TJ223	22K
R901	ERDS2TJ102	1K
R902	ERDS2TJ561	560
R903	ERDS2TJ101	100
R904	ERDS2TJ682	6.8K
R905	ERDS2TJ333	33K
R906	ERDS2TJ562	5.6K
R907	ERDS2TJ273	27K
R908	ERDS2TJ103	10K
R910	ERDS2TJ104	100K
R911	ERDS2TJ681	680
R914	ERDS2TJ151	150

Ref. No.	Part No.	Value
CAPACITORS		
C1, 2	ECEA1HU3R3	3.3
C3, 4 Ⓢ	ECCD1H101K	100P
C5, 6 Ⓢ	ECKD1H102ZF	0.001
C7, 8 Ⓢ	ECQM1H223JZ	0.022
C9, 10 Ⓢ	ECQM1H682JZ	0.0068
C11, 12	ECEA1HN010S	1
C13, 14	ECEA0JU330	33
C71, 72	ECEA1HU3R3	3.3
C73, 74 Ⓢ	ECCD1H390K	39P
C75, 76 Ⓢ	ECCD1H820K	82P
C77, 78 Ⓢ	ECKD1H391KB	390P
C81, 82 Ⓢ	ECCD1H560K	56P
C202 Ⓢ	ECKD1H103ZF	0.01
C203 Ⓢ	ECKD1H103ZF	0.01
C209, 210 Ⓢ	ECKD1H103ZF	0.01
C211	ECEA1HU010	1
C212 Ⓢ	ECKD1H103ZF	0.01
C213	ECEA1CU100	10
C214 Ⓢ	ECKD1H223ZF	0.022
C215 Ⓢ	ECCD1H101K	100P
C216 Ⓢ	ECKD1H223ZF	0.022
C217 Ⓢ	ECKD1H103ZF	0.01
C218	ECEA1HU3R3	3.3
C219	ECEA0JU101	100
C220	ECEA1CU100	10
C221 Ⓢ	ECCD1H080CC	8P
C222 Ⓢ	ECCD1H470K	47P
C223 Ⓢ	ECCD1H180KC	18P
C224	ECEA1HU010	1
C225 Ⓢ	ECKD1H223ZF	0.022
C226	ECQP1471JZ	470P
C227 Ⓢ	ECCD1H101KC	10P
C228 Ⓢ	ECKD1H103ZF	0.01
C229	ECEA1HUR47	0.47
C231 Ⓢ	ECQM1H183JZ	0.018
C235	ECKD1H103ZF	0.01
C244 Ⓢ	ECKD1H103ZF	0.01
C290 Ⓢ	ECCD1H221K	220P
C301	ECEA1HU2R2	2.2
C302	ECEA1VU4R7	4.7
C303	ECEA1CU101	100
C304, 305	ECEA1CU330	33
C306 Ⓢ	ECKD1H103ZF	0.01
C307, 308	ECEA1EU4R7	4.7
C309, 310 Ⓢ	ECQM1H223JZ	0.022
C311	ECEA1HU010	1
C312	ECEA1HUR47	0.47
C313	ECQM1H473JZ	0.047
C314	ECQP1471JZ	470P
C315	ECEA1HU010	1
C319, 320 Ⓢ	ECQM1H272JZ	0.027
C334 Ⓢ	ECCD1H101K	100P
C335 Ⓢ	ECCD1H121K	120P
C401, 402	ECKD1H103ZF	0.01
C403	ECKD1H103ZF	0.01
C404 Ⓢ	ECKD1H103ZF	0.01
C501, 502	ECKD1H331KB	330P
C503, 504	ECQM1H563JZ	0.056
C507, 508	ECEA1HU010	1
C509, 510	ECCD1H101K	100P
C513, 514	ECCD1H101K	100P
C515, 516	ECQM1H183JZ	0.018
C517, 518	ECQM1H104JZ	0.1
C519, 520	ECQM1H332JZ	0.0033
C521, 522	ECQM1H333JZ	0.033
C523, 524	ECEA1HU3R3	3.3
C531	ECKD1H103ZF	0.01
C532	ECEA1CU100	10
C551, 552	ECKD1H221KB	220P
C601, 602	ECEA1CU100	10
C603, 604	ECCD1H050CC	5P
C605, 606	ECKD1H821KB	820P
C607, 608	ECCD1H180KC	18P
C609, 610	ECCD1H330K	33P
C611, 612	ECCD1H101K	100P
C613, 614	ECCD1H101K	100P
C615, 616	ECEA1HN010S	1
C621, 622	ECQM1H104JZ	0.1
C623, 624	ECQM1H104JZ	0.1
C625	ECEA1JU330	33
C628	ECEA1HN3R3S	3.3
C629	ECEA1HU0R1	0.1
C652, 653 Ⓢ	ECKD1H221KB	220P
C654, 655 Ⓢ	ECKD1H103ZF	0.01
C656, 657 Ⓢ	ECKD1H103ZF	0.01
C701	ECKDKC103PF2	0.01
C702	ECQE1104KN	0.1
C703, 704	ECETS45V822U	8200
C706	ECEA1VU330	33
C708	ECEA1VU470	47
C709	ECKD1H223ZF	0.022
C710	ECEAOJU101	100
C711	ECKD1H103ZF	0.01
C712	ECEA1VU470	47
C713	ECKD1H103ZF	0.01
C801, 802	ECEA1HU3R3	3.3
C803	ECEA1HU3R3	3.3
C805	ECEA1HU010	1
C806	ECEA0JU471	470
C807	ECCD1H101K	100P
C808	ECEA1CU100	10
C901	ECEA0JU102	1000
C902	ECCD1H180KC	18P
C903	ECCD1H080CC	8P
C904, 905	ECKD1H103ZF	0.01
C906	ECKD1H103ZF	0.01
C907	ECEA25M4R7R	4.7
C908	ECEA1CU100	10
C910	ECEAOJU102	1000
C911, 912	ECEA1VU330	33

■ REPLACEM

Notes: 1. Part numbers are
Please use this pa
2. Important safety
Components ide
important for sa
use only manufa

Ref. No.	Part No.
INTEGRATED CIRCUITS	
IC1	AN6558F
IC71	AN7062
IC201	AN278
IC202	AN7273
IC301	SVIUPC1161C
IC501	AN6558F
IC601	STK2038-4
IC801	MN1404STE
IC901	UPB553AC
IC902	SVID1704C55
IC903	AN6873N
TRANSISTORS	
Q71, 72	2SA1123-R
Q201, 202, 210, 211, 702	2SC1815-Y
Q203, 207, 208	2SA1015Y
Q301, 901, 902	2SC1815GR
Q601, 602	2SC2631-Q
Q603, 811, 812 Ⓢ	2SC1845-E
Q701	2SD1265-D
Q703	2SC1685-QN
Q704	2SA564A-QN
Q801~803, 806, 814	2SC1815-Y
Q808, 813	2SA992E
DIODES	
D71, 72 Ⓢ	MA162A
D204	SVDKV1236Z
D208, 401~405	LN846RP
D210	MA27W-A
D206, 211, 601 602, 901~903, 914	MA165
D407	LN217RP
D701~704 ⚠	SVDS2V20
D706	MA4270
D707	MA4160-L
D708	MA167
D709, 918	MA4062-M
D801, 905~913	MA165
D802~806	MA167
D915 Ⓢ	MA162A
COILS	
L81~84	ELQS181KB
L201	SLA2B1-P
L202	SL02B7-P
L290, 291	SLQZ12G1-D
L301	SLM1B1-P
L303, 304	SLM5B2-P
L601, 602	SLQY07G-30
L750, 751	SLQX400-D
L801	SLQX101-3N

■ REPLACEMENT PARTS LIST

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "Ⓢ" mark is service standard parts and may differ from production parts.
4. Bracketed indications in Ref. No. columns specify the area.
5. The parenthesized number in the column of description stand for the quantity per set.

f. No.	Part No.	Value
ACITORS		
	ECEA1HU3R3	3.3
Ⓢ	ECCD1H101K	100P
Ⓢ	ECKD1H102ZF	0.001
Ⓢ	ECQM1H223JZ	0.022
Ⓢ	ECQM1H682JZ	0.0068
12	ECEA1HN010S	1
14	ECEA0JU330	33
72	ECEA1HU3R3	3.3
74 Ⓢ	ECCD1H390K	39P
76 Ⓢ	ECCD1H820K	82P
78 Ⓢ	ECKD1H391KB	390P
82 Ⓢ	ECCD1H560K	56P
Ⓢ	ECKD1H103ZF	0.01
Ⓢ	ECKD1H103ZF	0.01
210 Ⓢ	ECKD1H103ZF	0.01
	ECEA1HU010	1
Ⓢ	ECKD1H103ZF	0.01
	ECEA1CU100	10
Ⓢ	ECKD1H223ZF	0.022
Ⓢ	ECCD1H103KC	10P
Ⓢ	ECKD1H103ZF	0.01
	ECEA1HU3R3	3.3
	ECEA0JU101	100
	ECEA1CU100	10
Ⓢ	ECCD1H080CC	8P
Ⓢ	ECCD1H470K	47P
Ⓢ	ECCD1H180KC	18P
	ECEA1HU010	1
Ⓢ	ECKD1H223ZF	0.022
	ECQP1471JZ	470P
Ⓢ	ECCD1H101KC	10P
Ⓢ	ECKD1H103ZF	0.01
	ECEA1HUR47	0.47
Ⓢ	ECQM1H183JZ	0.018
	ECKD1H103ZF	0.01
Ⓢ	ECKD1H103ZF	0.01
Ⓢ	ECCD1H221K	220P
	ECEA1HU2R2	2.2
	ECEA1VU4R7	4.7
	ECEA1CU101	100
305	ECEA1CU330	33
Ⓢ	ECKD1H103ZF	0.01
308	ECEA1EU4R7	4.7
310 Ⓢ	ECQM1H223JZ	0.022
	ECEA1HU010	1
	ECEA1HUR47	0.47
	ECQM1H473JZ	0.047
	ECQP1471JZ	470P
	ECEA1HU010	1
320 Ⓢ	ECQM1H272JZ	0.027
Ⓢ	ECCD1H101K	100P
Ⓢ	ECCD1H121K	120P
402	ECKD1H103ZF	0.01

Ref. No.	Part No.	Value
C403	ECKD1H103ZF	0.01
C404 Ⓢ	ECKD1H103ZF	0.01
C501, 502	ECKD1H331KB	330P
C503, 504	ECQM1H563JZ	0.056
C507, 508	ECEA1HU010	1
C509, 510	ECCD1H101K	100P
C513, 514	ECCD1H101K	100P
C515, 516	ECQM1H183JZ	0.018
C517, 518	ECQM1H104JZ	0.1
C519, 520	ECQM1H332JZ	0.0033
C521, 522	ECQM1H333JZ	0.033
C523, 524	ECEA1HU3R3	3.3
C531	ECKD1H103ZF	0.01
C532	ECEA1CU100	10
C551, 552	ECKD1H221KB	220P
C601, 602	ECEA1CU100	10
C603, 604	ECCD1H050CC	5P
C605, 606	ECKD1H821KB	820P
C607, 608	ECCD1H180KC	18P
C609, 610	ECCD1H330K	33P
C611, 612	ECCD1H101K	100P
C613, 614	ECCD1H101K	100P
C615, 616	ECEA1HN010S	1
C621, 622	ECQM1H104JZ	0.1
C623, 624	ECQM1H104JZ	0.1
C625	ECEA1JU330	33
C628	ECEA1HN3R3S	3.3
C629	ECEA1HU0R1	0.1
C652, 653 Ⓢ	ECKD1H221KB	220P
C654, 655 Ⓢ	ECKD1H103ZF	0.01
C656, 657 Ⓢ	ECKD1H103ZF	0.01
C701	ECKDKC103PF2	0.01
C702	ECQE1104KN	0.1
C703, 704	ECETS45V822U	8200
C706	ECEA1VU330	33
C708	ECEA1VU470	47
C709	ECKD1H223ZF	0.022
C710	ECEAOJU101	100
C711	ECKD1H103ZF	0.01
C712	ECEA1VU470	47
C713	ECKD1H103ZF	0.01
C801, 802	ECEA1HU3R3	3.3
C803	ECEA1HU3R3	3.3
C805	ECEA1HU010	1
C806	ECEA0JU471	470
C807	ECCD1H101K	100P
C808	ECEA1CU100	10
C901	ECEA0JU102	1000
C902	ECCD1H180KC	18P
C903	ECCD1H080CC	8P
C904, 905	ECKD1H103ZF	0.01
C906	ECKD1H103ZF	0.01
C907	ECEA25M4R7R	4.7
C908	ECEA1CU100	10
C910	ECEAOJU102	1000
C911, 912	ECEA1VU330	33

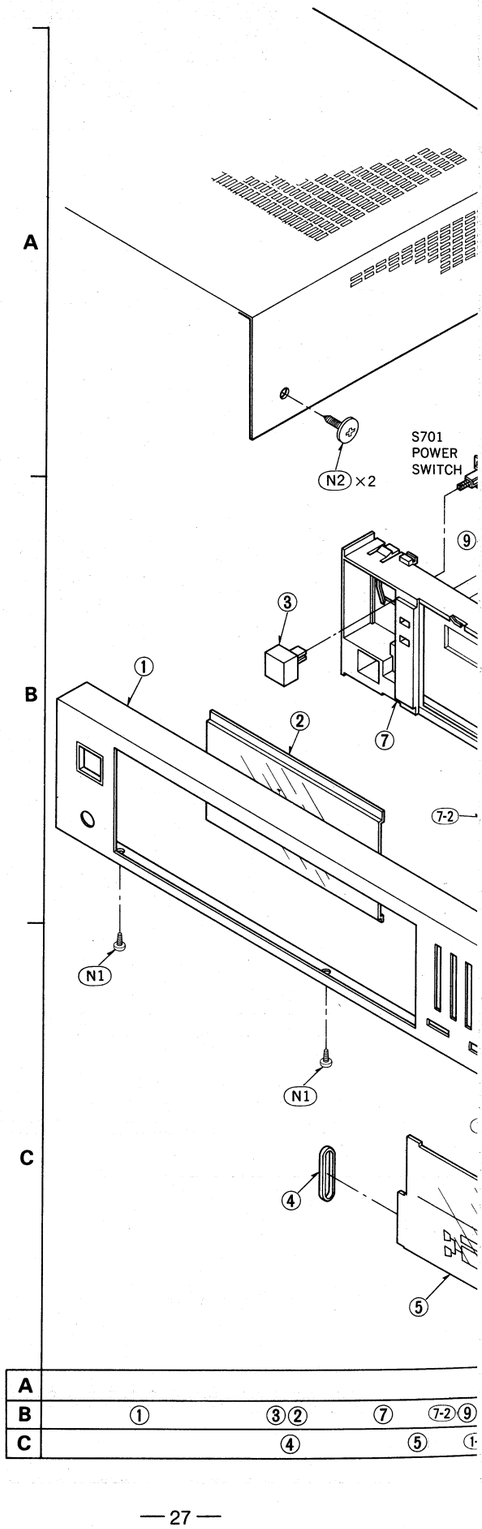
Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC1	AN6558F	Integrated Circuit
IC71	AN7062	Integrated Circuit
IC201	AN278	Integrated Circuit
IC202	AN7273	Integrated Circuit
IC301	SVIUPC1161C3	Integrated Circuit
IC501	AN6558F	Integrated Circuit
IC601	STK2038-4	Integrated Circuit
IC801	MN1404STE	Integrated Circuit
IC901	UPB553AC	Integrated Circuit
IC902	SVID1704C551	Integrated Circuit
IC903	AN6873N	Integrated Circuit
TRANSISTORS		
Q71, 72	2SA1123-R	Transistor
Q201, 202, 211, 702	2SC1815-Y	Transistor
Q203, 207, 208	2SA1015Y	Transistor
Q301, 901, 902	2SC1815GR	Transistor (Product Part No. is 2SC945)
Q601, 602	2SC2631-Q	Transistor
Q603, 811, 812 Ⓢ	2SC1845-E	Transistor
Q701	2SD1265-0	Transistor
Q703	2SC1685-QNC	Transistor
Q704	2SA564A-QNC	Transistor
Q801~803, 806, 814	2SC1815-Y	Transistor
Q808, 813	2SA992E	Transistor
DIODES		
D71, 72 Ⓢ	MA162A	Switching
D204	SVDKV1236Z	Variable Capacitance
D208, 401~405	LN846RP	LED, Tuning, Input Selector and, Stereo
D210	MA27W-A	Switching
D206, 211, 601 602, 901~903, 914	MA165	Switching
D407	LN217RP	LED, Volume
D701~704 ⚠	SVDS2V20	Rectifier
D706	MA4270	27V, Zener
D707	MA4160-L	16V, Zener
D708	MA167	Rectifier
D709, 918	MA4062-M	6.2V, Zener
D801, 905~913	MA165	Switching
D802~806	MA167	Switching
D915 Ⓢ	MA162A	Switching
COILS		
L81~84	ELQS181KB	Choke
L201	SLA2B1-P	AM Antenna
L202	SL02B7-P	AM, OSC
L290, 291	SLQZ12G1-D	Choke
L301	SLM1B1-P	Choke
L303, 304	SLM5B2-P	Choke
L601, 602	SLQY07G-30	Choke
L750, 751	SLQX400-D	Choke
L801	SLQX101-3M	Choke

Ref. No.	Part No.	Description
TRANSFORMERS		
T201	SLI4B511-Z	FM Det
T202	SLI4B513-Z	FM Discri
T203	SLI2B101-M	AM IFT
T701 ⚠	SLT5N438-W	Power Source
CERAMIC FILTERS		
CF201, 202	SVFE107MS8A	FM 10.7MHz (Red)
	SVFE107MS8D	FM 10.65MHz (Black)
CF204	SVFSFZ450F7L	AM, 450kHz
CRYSTAL		
X901	SVQ43U452-D	4.5MHz Counter OSC
VARIABLE RESISTORS		
VR201, 301	EVNE4AA00B53	FM MPX VCO Adj, 5kΩ
VR302	EVNE4AA00B55	500kΩ (B)
VR501	EWAPBAX05B15	Volume Control, 100kΩ (B)
VR502	EWANF5X05G15	Balance Control, 100kΩ (G)
VR503, 504	EWANA6X05C15	Tone Control 100kΩ (C)
VARIABLE CAPACITORS		
CT201	ECRHA010A11	AM Antenna Trimmer
LAMP		
PL701 ⚠	XAMS6Q17	Identification Plate Ind
FUSE		
F1 ⚠	XBA2C12TRO	250V, T 1.25A
COMPONENT COMBINATIONS		
Z301, 302	EXRP102K473C	47KΩ×1,000pF ×1
Z901	EXBP87104M	100kΩ (X7)
Z902	EXFP7331MW	330pF (X1)
SWITCHES		
S1~14, 16	SSG13	Preset Buttons
S401~404	SSH480	Input Selector
S405	SSH1033	Tape-Monitor, Stereoplex
S501	SSH1031	Loudness
S601, 602	SSH2047	Speaker Selectors
S701 ⚠	SSH1071	Power
FLUORESCENT DISPLAY TUBE		
FL	SAD7MT29ZA	Frequency Display
THERMAL DETECTORS		
PS801	SRPBA47101	Temperature Det, 130°C (266°F) Sensor
PS802	SRPBD47101	Temperative Pet, 100°C (212°F) Sensor
FM FRONTEND		
	SNVFE407G22	Frontend Pack (PCB Ass'y)

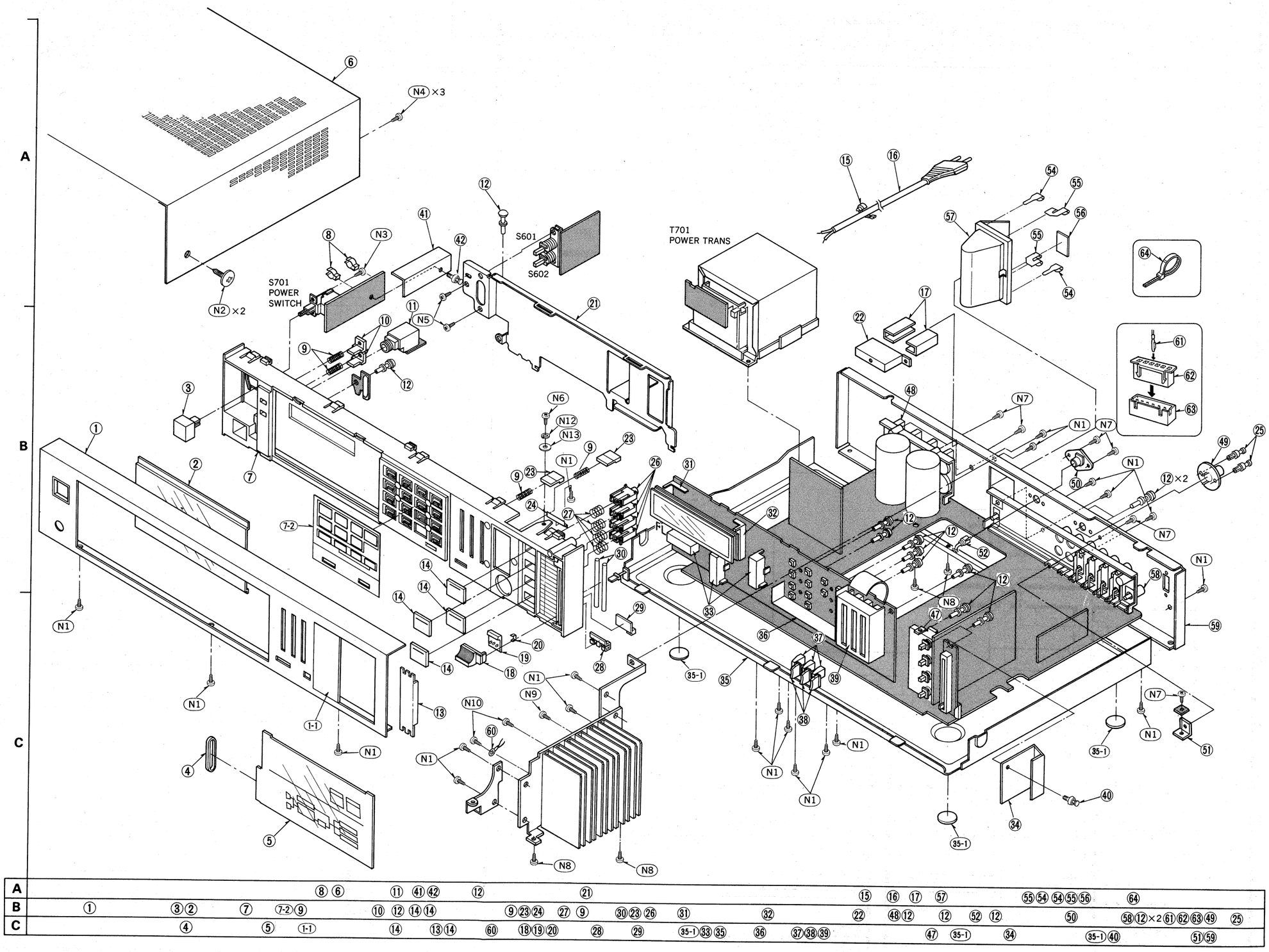
Ref. No.	Part No.	Description	
CABINET AND CHASSIS PARTS			
1 ○	SGWA350-SE	Panel, Front Ass'y	(1)
1 Ⓚ	SGWA350-KE	Panel, Front Ass'y	(1)
1-1 ○	SGK1834C	Sheet, Input Selector	(1)
1-1 Ⓚ	SGK1834D	Sheet, Input Selector	(1)
2	SGU409	Transparent Plate	(1)
3	SBC627	Button, Power Switch	(1)
4	SHG436	Spacer, Transparent Plate	(1)
5 ○	SDL84F	Indication Plate	(1)
5 Ⓚ	SDL84E	Indication Plate	(1)
6 ○	SKC1011S3	Cabinet	(1)
6 Ⓚ	SKC1011BB3	Cabinet	(1)
7 ○	SGXA350-SE	Grille, Sub Panel Ass'y	(1)
7 Ⓚ	SGXA350-KE	Grille, Sub Panel Ass'y	(1)
7-2 ○	SGK1835-5A	Sheet, Indication	(1)
7-2 Ⓚ	SGK1835-5B	Sheet, Indication	(1)
8	SJT347	Holder, Fuse	(2)
9	SUS257	Spring, Speakers Stereo Plex, Loudness	(S)
10 ○	SBC483-6T	Button, Speaker	(2)
10 Ⓚ	SBC483-8T	Button, Speaker	(2)
11	SJJ71B	Jack, Headphones	(1)
12	SHR415	Pin, P.C.B Holder	(10)
13 ○	SGX7669	Ornament, Main, Volume	(1)
13 Ⓚ	SGX7669-1	Ornament, Main, Volume	(1)
14	SBCA350-SE	Button, CD/Video/ Aux	(4)
15	SHR127	Bushing, AC Cord	(1)
16 ⚠	SJA138-3	AC Cord	(1)
17	SMX681	Shield Cover	(1)
18 ○	SBD96	Button, Main, Volume	(1)
18 Ⓚ	SBD96-1	Button, Main, Volume	(1)
19	SBE295	Holder, Main Volume	(1)
20	SHR5274	Spacer, Main Volume	(1)
21	SMC1140-1	Shield Plate	(1)
22	SMC1015	Shield Cover	(1)
23	SBC565-3	Button, Tape Monitor	(2)
24	SMC1063	Shield Plate, Tape Monitor	(1)
25	SHR401-1	Clip	(4)
26	SHR9724	Holder, Selector, Button	(4)
27	SUS191-1	Spring Selector Button	(1)
28	SHR322	Holder Main Volume	(1)
29	SHR9723	Holder, Volume	(1)
30	SUG183	Connection Rod Main Volume	(2)
31	SMN1911-1	Bracket, FL (Left)	(1)
32	SMN1911	Bracket FL (Right)	(1)
33	SMP373	Holder LED	(3)
34	SMZ315	SHield Cover	(1)
35	SKUA350-SG	Button Board Ass'y	(1)
35-1	SKL245-2	Foot	(4)
36	SMC1141-1	Shield Plate	(1)
37	SBZ9018	Connection Rod	(3)

Ref. No.	Part No.	Description	
38 ○	SBD97	Button, Bass, Treble	(3)
38 Ⓚ	SBD97-1	Button, Bass, Treble	(3)
39 ○	SGX7668	Plate, Bass, Treble	(1)
39 Ⓚ	SGX7668-1	Plate, Bass, Treble	(1)
40	SHR401-1	Clip	(1)
41	SMX809	Shield Cover	(1)
42	SHR411	Clip	(1)
47	SUW2832	Plate Selector Switch	(1)
48	SJF4815	Terminal Board, Selector	(1)
49	SJFA3101-1	Terminal Board AM	(1)
50	SJS9105	Socket, FM	(1)
51	SUW1429	Bracket	(1)
52	SJE87-1	Connector	(1)
54	SJC7	Terminal, Battery Case	(2)
55	SJC9	Terminal, Battery Case	(2)
56	SGK1569-1	Label, Battery Case	(1)
57	SJB3005-1	Battery Case	(1)
58	SJF8037-18N	Terminal Board, Input	(1)
59	SGP6180-3A	Rear Panel	(1)
60	SNE75	Plate, Ground Terminal	(2)
61	SJT783	Terminal	(7)
62	SJS5629	Socket (6 Pin)	(1)
62	SJS5215	Socket (2 Pin)	(1)
63	SJT3611	Post (6 Pin)	(1)
63	SJT3213	Post (2 Pin)	(2)
64	SHR301	Clamper, Read Wire	(3)
SCREWS, WASHERS			
N1	XTBS3+8BFZ1	Tapping, ⊕3×8	(20)
N2 ○	SNE2095-4	Cabinet	(2)
N2 Ⓚ	SNE2095-5	Cabinet	(2)
N3 Ⓢ	XTB3+8BFN	Tapping, ⊕3×8	(2)
N4 ○ Ⓢ	XTB3+8BFN	Tapping, ⊕3×8	(3)
N4 Ⓚ Ⓢ	XTB3+8BFZ	Tapping, ⊕3×8	(3)
N5	XYNS3+C6-1S	⊕3×6	(3)
N6 Ⓢ	XYN3+8S	⊕3×8	(1)
N7	XTB3+8BFZ	Tapping, ⊕3×8	(5)
N8	XTW3+8H	Tapping, ⊕3×8	(3)
N9 Ⓢ	XTB3+8B	Tapping, ⊕3×8	(1)
N10 Ⓢ	XTB3+16B	Tapping, ⊕3×16	(2)
N11	XYN3+C6FZS	Washer	(1)
N12 Ⓢ	XWA3B	Washer	(1)
N13 Ⓢ	XWG3	Washer	(1)
ACCESSORIES			
A1	SQF12170	Instruction Book	(1)
A2	SSA611-1	Loop Antenna	(1)
A2-1	SMA231	Holder B	(1)
A2-2	SMA233-1	Holder A	(A)
A2-3	XTN3+10AFZ	Screw, Loop	(2)
A3	SSA901	Cord, FM Antenna	(1)
PACKING PARTS			
P1 ○	SPP699	Polyethylene Bag	(1)
P1 Ⓚ	SPP649	Polyethylene Bag	(1)
P2	SPS3519-3	Pad, Left, Side	(1)
P3	SPS3521-5	Pad, Upper Side	(1)
P4	SPS3523	Pad, Upper Side	(1)
P5	SPG4863	Carton Box	(1)

■ EXPLODED VIEW



■ EXPLODED VIEW



| | | |

ORDER NO. HAD84122356S2

Service Manual

Supplement

QUARTZ Synthesizer
FM/AM Stereo Receiver

Receiver
SA-350

Color

(K)...Black Type
(S)...Silver Type

Color	Area
(K) (S)	[EGB]...F.R. Germany

Please use this manual together with the service manual for Model No. SA–350, Order No. HAD84092908C2.

■ REASON FOR CHANGE

- It is changed as follows because the FTZ standard is changed.

CHANGES

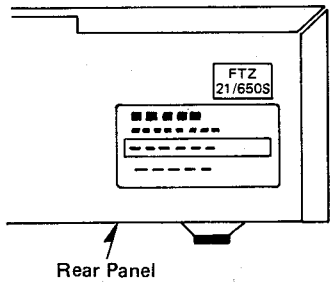
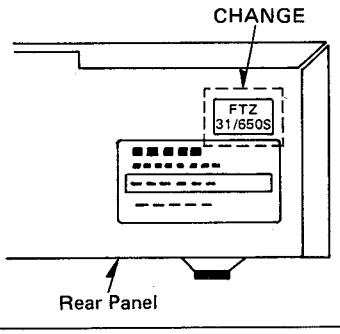
■ CHANGE OF THE DESTINATION MARK

EGA ⟶ EGB

■ REPLACEMENT PARTS LIST

Ref. No.	Change of Part No. SA–350 [EGA]	Change of Part No. SA–350 [EGB]	Part Name & Description	Per Set (Pcs.)	Remarks
FM FRONT END					
	SNVFE407G22	SNVFE407G24	Front End Pack (PCB Ass'y)	1	Page 26
ACCESSORY					
A1	SQF12170	SQF12170–1	Instruction Book	1	Page 27

■ DISCRIMINATION OF EGA SET AND EGB SET

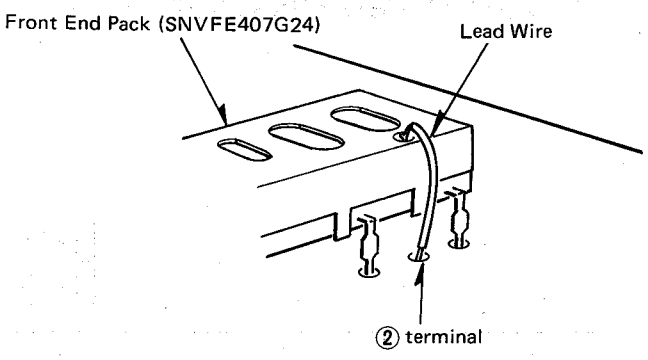
SA–350 [EGA]	SA–350 [EGB]
	

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

■ REPLACEMENT OF FRONT END PACK

- When replacing Front End Pack (SNVFE407G22) with Front End Pack (SNVFE407G24), connect the No. 2 terminal of P.C.B. to the Front End Pack by use of lead wire.



Printed in Japan
841201150 Ⓗ YK

ORDER NO. HAD84122356S2

Service Manual

Supplement

QUARTZ Synthesizer
FM/AM Stereo Receiver

Receiver
SA-350

Color

(K)...Black Type
(S)...Silver Type

Color	Area
(K) (S)	[EGB]...F.R. Germany

Please use this manual together with the service manual for Model No. SA–350, Order No. HAD84092908C2.

■ REASON FOR CHANGE

- It is changed as follows because the FTZ standard is changed.

CHANGES

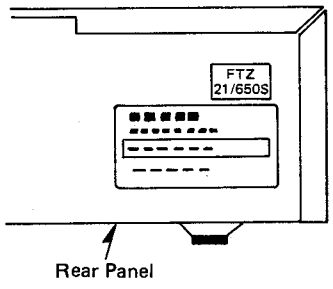
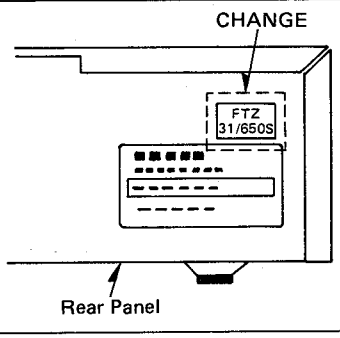
■ CHANGE OF THE DESTINATION MARK

EGA ⟶ EGB

■ REPLACEMENT PARTS LIST

Ref. No.	Change of Part No. SA–350 [EGA]	Change of Part No. SA–350 [EGB]	Part Name & Description	Per Set (Pcs.)	Remarks
FM FRONT END					
	SNVFE407G22	SNVFE407G24	Front End Pack (PCB Ass'y)	1	Page 26
ACCESSORY					
A1	SQF12170	SQF12170–1	Instruction Book	1	Page 27

■ DISCRIMINATION OF EGA SET AND EGB SET

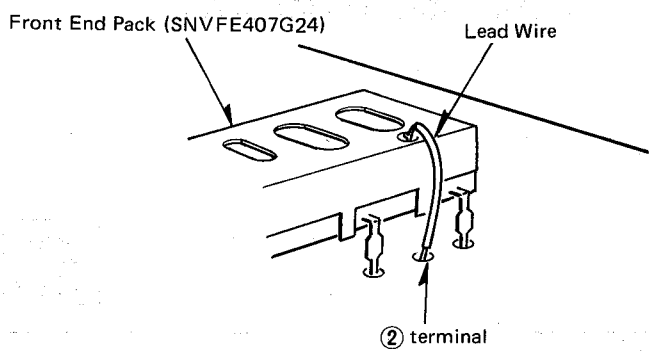
SA–350 [EGA]	SA–350 [EGB]
	

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

■ REPLACEMENT OF FRONT END PACK

- When replacing Front End Pack (SNVFE407G22) with Front End Pack (SNVFE407G24), connect the No. 2 terminal of P.C.B. to the Front End Pack by use of lead wire.



Printed in Japan
841201150 Ⓗ YK

ORDER NO. HAD84122356S2

Service Manual

Supplement

QUARTZ Synthesizer
FM/AM Stereo Receiver

Receiver
SA-350

Color

(K)...Black Type
(S)...Silver Type

Color	Area
(K) (S)	[EGB]...F.R. Germany

Please use this manual together with the service manual for Model No. SA–350, Order No. HAD84092908C2.

■ REASON FOR CHANGE

- It is changed as follows because the FTZ standard is changed.

CHANGES

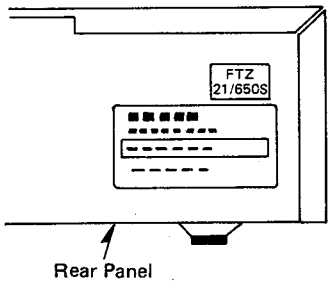
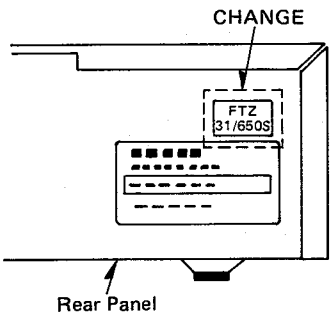
■ CHANGE OF THE DESTINATION MARK

EGA ⟶ EGB

■ REPLACEMENT PARTS LIST

Ref. No.	Change of Part No. SA–350 [EGA]	Change of Part No. SA–350 [EGB]	Part Name & Description	Per Set (Pcs.)	Remarks
FM FRONT END					
	SNVFE407G22	SNVFE407G24	Front End Pack (PCB Ass'y)	1	Page 26
ACCESSORY					
A1	SQF12170	SQF12170–1	Instruction Book	1	Page 27

■ DISCRIMINATION OF EGA SET AND EGB SET

SA–350 [EGA]	SA–350 [EGB]
	

Technics

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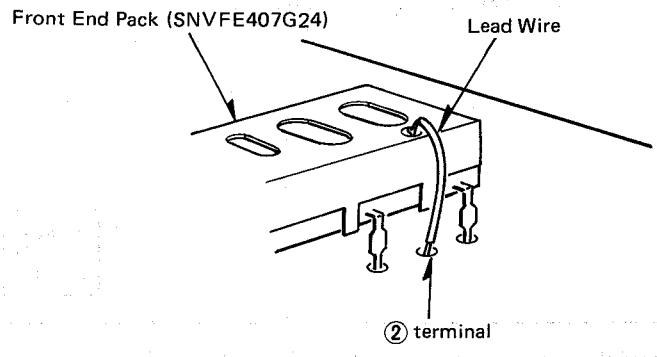
■ REPLACEMENT OF FRONT END PACK

- When replacing Front End Pack (SNVFE407G22) with Front End Pack (SNVFE407G24), connect the No. 2 terminal of P.C.B. to the Front End Pack by use of lead wire.



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